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A Managerial Planning Model: An Application to the Farm-Cultured Catfish Industry in Determining the Characteristics of Processed Farm-Cultured Catfish Consumers in Little Rock and North Little Rock, Arkansas

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A MANAGERIAL PLANNING MODEL: AN APPLICATION TO THE FARM-CULTURED CATFISH INDUSTRY IN DETERMINING THE CHARACTERISTICS OF PROCESSED FARM-CULTURED CATFISH CONSUMERS IN LITTLE ROCK AND NORTH LITTLE ROCK, ARKANSAS

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CHAPTER I
INTRODUCTION TO MANAGERIAL PLANNING--- AN APPLICATION TO PROCESSED FARM-CULTURED CATFISH PRODUCTION

Within the contemporary business firm environment there is a consensus among management scholars and practitioners that the managerial function of planning is essential for the survival and growth of business organizations.

While the planning process includes the activities of evaluating all relevant information and the assessment of probable future developments, its chief manifestation is the statement of overall business firm objectives and a recommended course of action. Basically, this overall plan is an integrated set of subplans developed by the various functional areas of the business and represents specific strategies directed toward attaining the overall business objectives.

Because of the interrelatedness of the functional areas of a business and overall business firm objectives, management theorists have systemized a sequential procedure through a Management Planning Model (MPM) for implementing and conducting the planning process (Figure 1). This model presents not only an orderly framework for conceptualizing the totality of planning and the critical decision points, but each segmental step is directly defined so that it or its parts can be independently evaluated in light of any preceding steps or any steps that are subsequent.

The intent of the following research was basically two-fold. First, the overall objective was to evaluate the processed farm-cultured catfish business firm in terms of the Management Planning Model presented in Figure 1. Secondly, a specific objective equally important was to focus on the marketing strategy section of the planning model

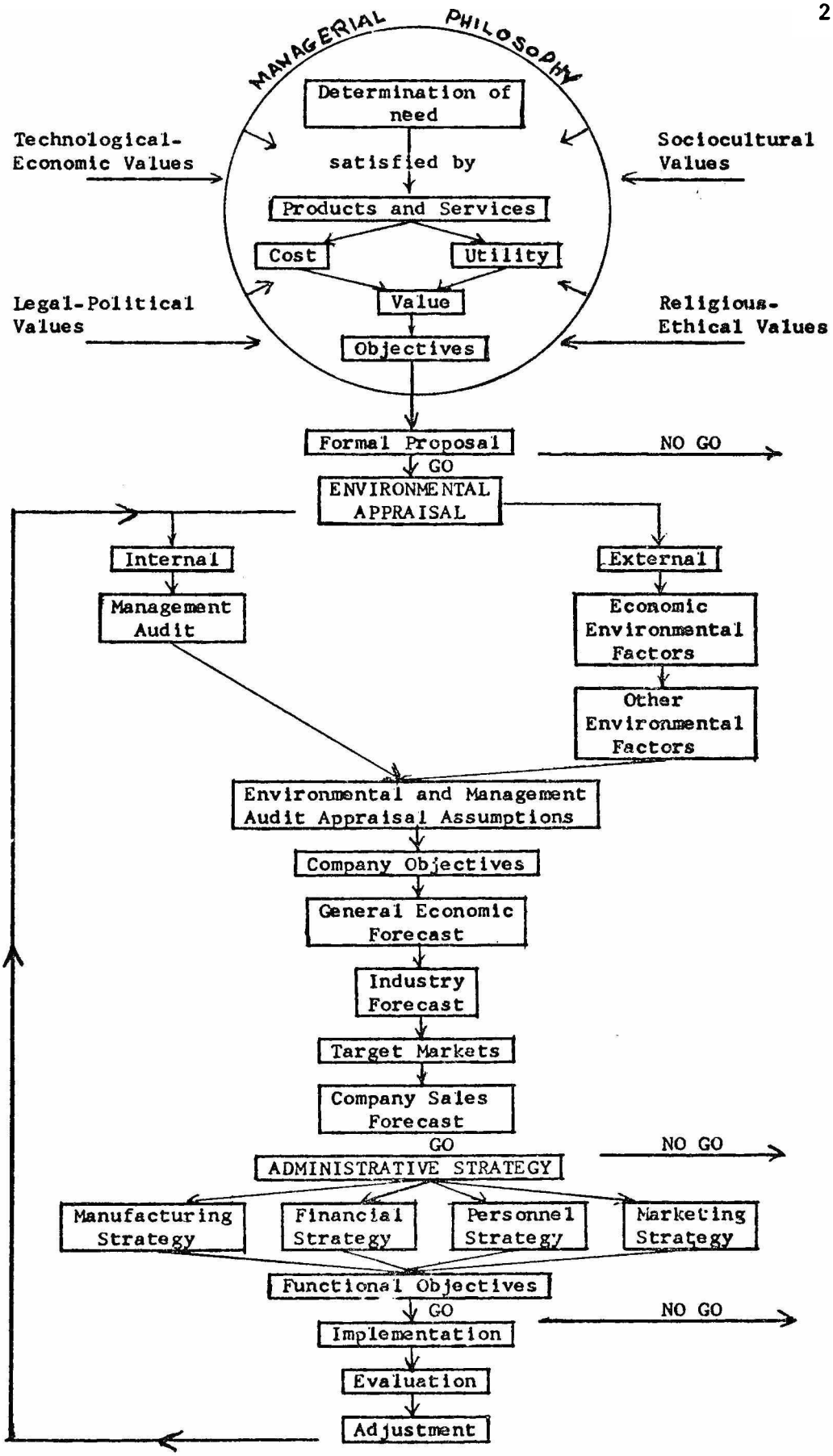

Figure 1: Management planning model

Source: Robert D. Hay, "Organizational Theory" unpublished manuscript, University of Arkansas, Fayetteville, 1973.

and examine the managerial strategy of segmenting the processed farm-cultured catfish market.

The (MPM) is composed of three major parts, the managerial philosophy section, the environmental appraisal section, and the administrative strategy section. Each section as well as the individual steps are sequential and build one on the other. For this reason, the processed farm-cultured catfish business firm will be evaluated by major sections of the (MPM).

Managerial Philosophy

The managerial philosophy section of the (MPM) represents the mental process of envisioning a product and/or service that would satisfy a perceived consumer need.

Prior to 1968, the cultured catfish industry was based almost entirely on the market for live fish for stocking pay-lakes, farm ponds, reservoirs, and local markets, i.e., cultured catfish was not a commercial product to be distributed for sale or resale in retail food outlets. Instead, the existing market outlets were to the recreational industry for sports fishing and to local residents for consumption. However, beginning in the time period around 1968 these traditional outlets became unable to absorb the increased farm production of cultured catfish. At this time, farm entrepreneurs who were acting in unison as farm cooperative groups in the major cultured catfish producing area of the United States perceived the need to develop a processed farm-cultured catfish product that would relieve the producers' expanding production dilemma while simultaneously providing the American homemaker with a

high quality competitive and highly nutritious meat product. 1/ Thus, a need and the utility of processed farm-cultured catfish had been mentally visualized by these farm cooperative groups.

The creation of a product or service requires cost outlays for production, and although the cost of producing for the traditional markets were available, there was no processing cost structure in existence. Between 1966-1968 the breakeven price per pound for the producers was between 27 - 32 cents. At that time the average price to producers was approximately 38 cents per pound and returned the producer a fair return of approximately 14 percent on his investment. 2/ From the cost information available and mental projection it was envisioned that the consumer's cost would approximate 80 cents per pound. 3/ The cost of production plus the utility of the good (high quality and highly nutritional meat) projected a food item that would solicit this fair market value. Once the mental process of planning advances to a point of perceptually confirming the product has economic value, the creation of that product with its envisioned attributes become a set of objectives that indicates whether the initial perceived need should be eliminated or whether it warrants a formal proposal for further investigation.

1/ U.S. Bureau of Commercial Fisheries, The Market Potential for Farm Cultured Catfish, (Ann Arbor, Michigan, June 1969), pp. 1-2. and

Clayton, H. Shubert, et. al., Feasibility Analysis of Commercial Channel Catfish Farming, Economic Research Associates (Los Angeles, California, 1969), pp., III 1-4.

2/ U.S. Department of the Interior, A Program of Research for the Catfish Farming Industry, Fish and Wildlife Service, Bureau of Commercial Fisheries, (Ann Arbor, Michigan, September, 1970), p. 21 and Tennessee Valley Authority, Intensive Catfish Production and Marketing, (Muscle Shoals: Alabama, F69ACD6), p. 8.

3/ Schuberr, pp. III 15.

The mental planning processes of the cooperative groups indicated a formal proposal should be implemented and further study made of processed farm-cultured catfish.

The perceptions and thinking about the need, utility, economic value, and objectives reflected a managerial philosophy that was pervasive among management of the cultured catfish enterprises. However, the philosophy was significantly influenced by external technological-economic, social-cultural, political-legal, and religious-ethical values which the individual or group of individuals held.

During 1968 there were several favorable external technological and economic factors that had a significant influence on the mental planning processes of the cooperative farm groups and resulted in the formal proposal to further investigate processed farm-cultured catfish. The favorable technological and economic factors consisted of new break throughs in methods of supplemental feeding, pond construction, disease control, and controlled breeding. These improvements indicated that farm-cultured catfish could be raised under intensive culture resulting in high per acre yield, a consistent quality, and a more tasty catfish than those obtained from rivers, lakes or streams. 4/ Also, developments in transporcation and freezing in the preceding few years had made it possible to economically transport highly perishable farm products. 5/

Throughout the most favorable farm-cultured catfish producing regions in the United States, unemployment rates were higher than the national average. Also, the unemployment consisted of a high percentage of unskilled and semi-skilled workers the processed farm-cultured

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4/ Schubert, pp. II 1 and 2.

5/ Schubert, p. III 4.

catfish industry would need. In addition, during the first eight years of the sixties disposable personal income and the number of homemakers in the labor force had increased considerably and projections were that the increase would continue through 1985 and would be favorable points for the overall success of processed farm-cultured catfish. 6/

Although income status of the consumer was implied by Schubert, it was not specified as a significant economic influence on the prevailing managerial philosophy during the processed farm-cultured catfish mental planning phase, it had to exert an influence because this point had been researched and reported to cultural buffalo fish entrepreneurs of the same regions in 1963. 7/ Morrison reported in 1963 that low income households in Oklahoma City, Oklahoma and Little Rock, Arkansas consumed significantly more cultured buffalo fish than high income households. 8/

Price is normally a significant economic factor in any planning process. However, it was envisioned by cultured catfish cooperative groups that the price of 80 cents per pound to the consumer was a fair market price in terms of the superior quality product that technology would make possible. 9/

The sociological factors that were known to exert considerable influence on the managerial philosophy of farm cooperative groups during the mental planning processes centered around geographical and

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6/ W. R. Morrison, "Products and Packaging," Producing and Marketing Catfish in the Tennessee Valley, (Conference Proceedings, June 30-July 1, 1971), pp. 94-96.

7/ Schubert, p. III 4.

8/ W. R. Morrison, Consumer Acceptance of Fresh Buffalo Fish, Arkansas Agricultural Experiment Station, Report 116 (Fayetteville, 1963), pp. 5-10.

race groups. Schubert pointed out that by tradition catfish was a fresh-water fish preferred by consumers in southern and midwestern states. Schubert further pointed out two major reasons for the traditional preference: (1) The climate was suitable for catfish production, and (2) water pollution was less in these regions and gave the catfish a superior taste. 10/ In retrospect these regional concerns were reinforced as being highly significant to the cooperative groups. In 1970 researchers stated that the area accounting for 80 percent of the production of farm-cultured catfish production in the United States possessed the two previously described regional production characteristics plus others that were essential for cultured catfish production. 11/

Schubert implied that some mental consideration was given to the sociological population segment of race in stating that outside the traditional catfish consumption regions that approximately 75 percent of the catfish consumption was by Negroes. Too, in the research conducted on cultured buffalo fish by Morrison in 1963 it was specifically reported to the cultured fish industry that Negro households in Oklahoma City, Oklahoma and Little Rock, Arkansas purchased cultured buffalo fish at a rate of approximately 25 percent greater than white households. Morrison had further reported to the industry that Negro homemakers' attitude toward cultured buffalo fish was much more favorable than the attitude of white homemakers. 12/ Purcell and Paunikar

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10/ Schubert, p. II 1.

11/ U.S. Department of the Interior, p. 5.

12/ Morrison, pp. 9 and 18.

reported similar research findings to the fish industry in 1968. From an analysis of data reported by a consumer panel in Atlanta, Georgia for a five year period (1958-1962) Purcell and Raunikar reported that Negro household consumption of fresh fish was 284 percent greater than fresh fish consumption by white households. 13/

Although the sociological factor of race was not specifically documented as being of major concern throughout the mental planning phase of processed farm-cultured catfish production, there were implications through brief statements and through prior research findings supplied to the fish and cultured fish industry that race was an important decision factor. In December 1971 the hazy implications were more clearly brought to light by Dr. Tom Slough, Manager of Blue Channel Enterprises, Tippo, Mississippi. 14/ Dr. Slough pointed out that the initial thinking of the cultured catfish cooperative groups was to assure processed product survival through establishing a dependable localized retail market and then expanding to more distant markets in the southeastern one fourth of the United States as supply, technology, and efficiency dictated. Dr. Slough further pointed out that the cultured catfish industry felt that catfish familiarity within the major producing region and the high concentrations of Negro households within the region and their high consumption rate of catfish would be very favorable for processed farm-cultured catfish production.

The religious-ethical externalities that influenced the managerial philosophy of cultured catfish farm cooperative groups during the

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13/ J. C. Purcell and Robert Raunikar, Analysis of Demand for Fish and Shellfish, University of Georgia Agricultural Experiment Station, Research Bulletin 51, (Atlanta, December, 1968), p. 21.

14/ Personal interview between the researcher A. K. Pippin and Dr. Tom Slough, Manager Blue Channel Enterprises, Tippo, Mississippi, December, 1971.

envisioning phase of processed farm-cultured catfish production were not documented or implied in the historical growth of the industry. However, Morrison had reported to the cultured fish industry in 1963 that religious preference significantly influences the attitude of homemakers toward cultured buffalo fish. Non-protestant attitudes were more favorable than the attitudes of Protestants. 15/ In 1966, Krebs and Storey reported to the fish industry that a significant variation between Catholic and Non-Catholics existed in consumption of haddock, flounder and cod under certain circumstances. In Quincy, Massachusetts and in Binghamton, New York, Catholic households bought fresh haddock in grocery stores significantly more often than Non-Catholics. Catholic households bought precooked haddock significantly more often in both cities. In Binghamton, Catholics bought fresh haddock, flounder, and cod significantly more often in seafood markets compared to Non-Catholics while in Quincy Non-Catholics ordered restaurant meals of haddock and flounder significantly more often. Krebs and Storey's research indicated that religious values did influence consumption of haddock, flounder, and cod. The researchers pointed out that variations between cities also existed but were not isolated. Possible explanations of differences between cities suggested by the researchers were price differences, area preferences, and availability of fresh fish in each market. 16/

The political-legal environment through which society regulates the individualistic American ideology exerts a degree of political influence on the managerial philosophy of every business endeavor.

15/ Morrison, p. 18.

16/ Edward H. Krebs and David A. Storey, An Analysis of Consumer Purchases of Fresh Haddock, Flounder and Cod in Quincy Mass., and Binghamton, N. Y., Massachusetts Agricultural Experiment Station, Bulletin No. 579, (Amherst, June, 1969), pp. 12, 13 and 18.

The U.S. Government or the regulatory body of our political-legal environment has the legislative power to change the political climate and legal rules prevailing and include such considerations as the general tax structure, its degree of enforcement, political stability, effectiveness of pressure groups, police protection, trading restrictions, flexibility of law, and the legal rules of government. 17/

Although the political-legal environment in the United States during 1968 and previous years entered into, but was not a deterrent to the favorable mental planning of the cultured catfish cooperative groups, there were some specific legal issues that were primary for the processed farm-cultured catfish firm. These considerations involved permits to sell fish, disposal and use of waste or by product, water impoundments, restriction of flow, release of water, and the provisions of the Federal Food, Drug and Cosmetic Act. 18/ Through the logic of mental planning the cultured catfish cooperative groups resolved these obstacles into manageable activities. Dr. Tom Slough, Manager of Blue Channel Enterprises, Tippo, Mississippi pointed out that the legal issues turned out to be the least problem of the processed farm-cultured catfish firm because the issues were involved with existing local, state, and federal rules and the business firms were able to conform with a minimum effort. 19/

17/ E. Jerome McCarthy, Basic Marketing, 5th ed., (Homewood, Illinois: Richard D. Irwin, Inc., 1975) pp. 90-94 and George R. Terry, Principles of Management, 6th ed., (Homewood, Illinois: Richard D. Irwin, Inc., 1974), p. 30.

18/ J. H. Yeager, "Factors to Consider Before Entering Catfish Farming", Producing and Marketing Catfish in the Tennessee Valley, (Conference proceedings, June 30-July 1, 1971), p. 15 and U.S. Department of Agriculture, "A Report to the Catfish Processors", Research project S-83 processing and Marketing Subcommittee Report, (1973).

19/ Slough, personal interview, December, 1971.

In 1968 these were the technological-economic, socio-cultural, religious-ethical and political-legal values that influenced the managerial philosophy of the cooperative farm groups throughout the mental planning and decision making processes on processed farm-cultured catfish production. These factors indicated that processed farm-cultured catfish production was favorable and should be investigated more thoroughly.

Environmental Appraisal

In light of the (MPM), after a formal proposal to proceed with an envisioned business idea is declared, an environmental appraisal should be implemented as a guide in determining the internal and/or external factors which influence the success of the idea. A study of the internal factors is initiated only to assess the strengths and weaknesses of an existing firm relative to introducing a new product. A study of the external factors may be used to supplement the study of internal factors. However, a study of the external environment is a necessity in itself when a new business is envisioned. Processed farm-cultured catfish production involved the introduction of a new business enterprise. Therefore, only the external environmental section of the (MPM) was applicable.

External Economic Factors

Since the first sequential step of the environmental section of the (MPM) is the examination of external economic factors which may affect a business venture, it is appropriate to examine these influences as they related to the processed farm-cultured catfish firm in 1968.

The first external economic factors that were given consideration by the processed farm-cultured catfish cooperative groups were land and its attendant characteristics and climate. Although the cultured catfish producers had previously evaluated these characteristics, it was not in light of

implementing a processed farm-cultured catfish production enterprise. The characteristics of land and climate that the cooperative groups thought were essential for a successful operation were the availability of land at a reasonable cost, adequate water, favorable soil conditions for water holding capacity, and a warm climate to facilitate a maximum growing season. The U.S. Department of the Interior and Schubert pointed out that the Mississippi Delta Region was an area favorable on all characteristics. 20/ The cooperative group's reevaluation of the land characteristics was never documented, but it was essentially favorable because in 1970 the Mississippi Delta accounted for 80 percent of the total U.S. production of farm-cultured catfish. 21/

The second external economic factor that was examined by the cooperative groups was capital in terms of its availability and loan terms. In the preliminary stages of this investigation it was determined that the investment for an individual to produce processed farm-cultured catfish would be more than most individuals could or would be responsible for. However, it was determined that by the legal formation of a farmer-owned cooperative and by meeting certain specific conditions that the Farmers Home Administration through the Office of Economic Opportunity would supply an ample amount of funds over a long period of time (40 years) at an interest rate of 4 1/8 percent. 22/ The rationale of the Office of Economic

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20/ U.S. Department of the Interior, p. 5 and Schubert V 9-10.

21/ U.S. Department of the Interior, p. 5.

22/ Schubert, pp. 1, V 1-5, VI 5, Personal interview with Manager of Southern Catfish Processors Inc., Dumas, Arkansas, 1971, and J. W. Goodman; "Production and Marketing Experiences of Pickwick Catfish Cooperative," Producing and Marketing Catfish in the Tennessee Valley, (Conference proceeding, June 30-July 1, 1971), p. 57.

Opportunity was that the farm cooperative would help improve the economic and social position of the poor, particularly the rural poor. 23/ In this light the cooperative groups specifically examined the labor market in the Mississippi Delta. During the time period of 1968-70 the Department of the Interior estimated that about 250,000 workers in the region were unemployed with a high percentage being unskilled and semi-skilled minority group members. The rate of unemployment during this time was not specified but it was pointed out that the rate was much higher than the nationwide rate of approximately 6 percent during the corresponding time.

Per capita income figures were not immediately available during the examination period. However, 1965 figures were available and served as a guide to the Mississippi Delta Region's per capita labor income. Arkansas' 1965 per capita income was $1,845 and for Mississippi the per capita income was $1,608. The Nationwide per capita income in 1965 was $2,746. 24/ These figures on labor availability and per capita income were significant to the cooperative groups for two reasons. First, the processed farm-cultured catfish business was visualized as a labor intense business that would require an abundance of unskilled and semi-skilled labor which was available. Secondly, the characteristics of the labor force (high rate of unemployment and low per capita income relative to the national average) indicated that the processed farm-cultured catfish business would meet the required conditions of the Office of Economic Opportunity. Specifically, the business would improve the economic and social position of the region's poor residents and qualify for long term-low interest rate federal funds.

23/ Schubert, p. 1.

24/ U.S. Department of the Interior, pp. 2-3.

The fourth external economic factor that the cooperative groups recognized as having a major influence on the processed farm-cultured catfish business was quality of management. During this embryonic stage of the processed farm-cultured catfish business very little was known about what type of management (technical, generalized, etc.) would assure the success of such a business. However, it was known that in prior years two cultured fish cooperatives were formed at Dumas and Lonoke, Arkansas as an outlet primarily for buffalo fish and that both were unsuccessful and inactive in 1968. Schubert pointed out that one of the major causes of these failures was "inexperienced management who were unable to secure sufficient markets for production". 25/ In 1971 Bill Hattaway the manager of Southern Catfish Processors Inc. at Dumas, Arkansas stated that the failure of the early cultured fish cooperatives was partly due to heavy reliance on men that were highly specialized in acquaculture but with a limited management background. 26/ In 1968 it appeared that management was treated as an intangible factor. Also, it was recognized that a sucessful manager should possess the ability to coordinate the details of processing, marketing, and distribution to the production timing of the individual producers but there was no attempt by the cooperative groups to justify this assumption.

The last external economic factor examined by the cooperative groups was the market for processed farm-cultured catfish. Within the concept of

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25/ Schubert, p. V 1.

26/ Bill Hattaway received a Masters degree in Management from Mississippi State University and had held his mangerial position for two years.

market the cooperative groups specifically considered the potential market area, transportation, market channels, product form, packaging, retailing possibilities, price and competition. The marketing area was important to the cooperative groups for two reasons. First, if the processed farm-cultured catfish business was implemented as a farmers cooperative in the Mississippi Delta Region, the plant would need to be located within a 75-125 mile radius of a medium to large city. The idea was that cooperative owned transportation could be used for supplying local outlets and that adequate carrier transportation facilities would be available for shipping to market areas with a minimum of shipping costs. 27/ Secondly, per capita fish consumption in the U.S. had slowly but steadily increased throughout the 1960's and the population of the larger cities was experiencing a faster rate of growth than other population areas in the economy. 28/

The marketing channels that the cooperative groups were initially planning to serve were the local markets, i.e., to supermarkets and restaurants within a 50-mile radius of the processing plant, and secondly, to regional markets within 125-mile radius of the central facility by common carrier. 29/ The form of cultured catfish that the cooperative groups planned to supply in the markets was the whole (skinned, gutted, collarbone and/or head removed). The decision was based primarily on traditional preferences expressed by consumer

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27/ Schubert, p. V 4.

28/ U.S. Department of the Interior.

29/ Schubert, p. III 1.

purchases. 30/ Based on preliminary research involving the freezing of cultured catfish the cooperative groups planned to provide the markets with a frozen processed farm-cultured catfish. 31/ Market surveys were used in the decision by the cooperative groups to individually package processed farm-cultured catfish. The surveys indicated that an individually packaged fish (1-1 1/4 pounds) would solicit a higher price from retailers. The cooperative groups also believed that individual packaging would have the added advantage of helping to differentiate the product on the basis of quality. 32/ Specific promotional programs were not examined for cultured catfish in 1968; however, a continuous sales effort was outlined by the cooperative groups. Since the product was to be fed a high protein diet, it was agreed that all programs to market the product should be built around the basic idea of a superior quality and taste. Pricing the processed farm-cultured catfish product was guided by the estimated cost of production and processing, but the cooperative groups were faced with the decision of what price in light of a superior product and the low price of wild imported and domestic fish. As Schubert pointed out, it was impossible for the consumer to evaluate quality prior to purchase. Under these circumstances the cooperative groups made the decision to price the product to retailers at a price that would just cover costs of production. In 1968 the cooperative groups estimated that the producer would receive approximately 38 cents per pound for the raw

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30/ Schubert, p. IV 6.

31/ Schubert, pp. III 7 and IV 8.

32/ Schubert, pp. IV 6 and 8.

product and that transportation, processing, and storage would cost approximately 07 cents per pound, thereby resulting in a price of about 65 cents per pound to the retailer and about 80 cents per pound to the consumer. 33/

Market competition from wild fish, imported and domestic, was of considerable concern to the processed farm-cultured catfish planning groups in 1968. The concern was primarily one of an overall large supply which resulted in a significant price differential between the processed farm-cultured catfish and wild fish. However, the cooperative groups knew that the quantity of wild fish harvested from natural waters was declining in many sections of the U.S. due in part to pollution, siltation, etc. This was especially true along the Mississippi Delta and Gulf Coast area. The cooperative groups also knew that imports of wild fish were expected to steadily increase. Although these two areas of awareness cast some uncertainty on the future favorability of competition for processed farm-cultured catfish, the cooperative groups believed that the superiority of processed farm-cultured catfish would shortly command a premium price over wild imported and domestic fish. 34/

Figure 2 presents a graphic summary of the external economic influences as they existed in 1968 for the processed farm-cultured catfish business. The summary indicates that the external economic environment in 1968 was rather favorable for the implementation of a processed farm-cultured catfish business although the areas of management, promotion, and product competition were inadequately planned.

33/ Schubert, pp. III 15 and IV 5.

34/ U.S. Department of the Interior, p. 27, Schubert, p. III 7, and Don McBride, "Welcome Remarks and Conference Objectives," Producing and Marketing Catfish in the Tennessee Valley, (Conference Proceedings, June 30-July 1, 1971), p. 3.

External Economic Factors	Processed Farm-Cultured Catfish Influence		
	Favorable	Unfavorable	Unknown
Land			
1. Availability	X		
2. Cost	X		
3. Water	X		
4. Soil condition	X		
Climate	X		
Capital			
1. Availability	X		
2. Terms			
(A) loan length	X		
(B) Interest rate	X		
Labor			
1. Availability			
2. Quality	X		
3. Per Capita income	X		
Management			
1. Availability			X
2. Quality			X
Marketing			
1. Market Area	X		
2. Transportation	X		
3. Channels	X		
4. Product form	X		
5. Packaging	X		
6. Promotion			X
7. Price	X		
8. Competition		X	
Production processes	X		

Figure 2: Summary of External Economic Factor Influences on Processed Farm-Cultured Catfish Production, Mississippi Delta Region, 1968.

The availability and quality of management recognized as essential for the success of processed farm-cultured catfish was assumed to be adequate by the cooperative planning groups. However, there were no investigations that would lead to this assumption. Also, implications were that imported and some areas of domestic wild fish production would constitute a strong competitive unfavorable influence on processed farm-cultured catfish but a strong belief in the superiority of the product dominated over further investigation by the cooperative groups. In the area of management, promotion and competition there were implications that the cooperative farm-cultured catfish planning groups did not thoroughly accomplish their function of planning.

External Non-Economic Factors

The second step of the environmental appraisal section of the (MPM) considers the non-economic external factors such as the socio-cultural, political-legal, and the religious-ethics that may affect the success of a business idea or venture. Although the processed farm-cultured catfish cooperative groups were aware of and mentally examined several non-economic factors, there was little evidence to warrant these factors as being considered primary influences in the planning of processed farm-cultured catfish production.

Literature indicated that the external non-economic influences of regional preference, race, and legal issues were documented considerations of the farm cooperative planning groups. However, the degree of involvement into these and other non-economic factors were very slight. For example, Morrison's 1963 research on cultured buffalo fish was reported to the cultured fish industry and indicated that

regional preference, race, and religion had a significant influence on sales of and attitudes toward cultured buffalo fish. Morrison also reported that the occupational social group, age composition of the household, and size of household influenced acceptance of cultured buffalo fish. 35/ Comparable finding on other types of fish were also reported to the fish industry prior to and during the embryonic planning stages of processed farm-cultured catfish production. Although indications were that the farm cooperative groups knew about the influences of regional preference and race, they were never specifically investigated for processed farm-cultured catfish until the business had been implemented. Also, several of the external non-economic factors such as religion, occupational social groups, age composition of the household, size of the household and formal education of the homemaker that were reported as influencing product acceptance by researchers prior to and during 1968 have never been examined relative to their influences on farm-cultured catfish production.

The legal issues that the cooperative farm groups examined in 1968 appeared to be significant but only in terms of being able to comply without complex or costly details. These issues centered around the body of regulations that governed the selling of fish intra and interstate, disposal and use of waste by-products, water impoundments, restriction of flow, release of water, and normal day-to-day business operations. Charles A. Oravetz, the fishery marketing specialist for the U.S. Department of Commerce, stated that the following laws were particularly applicable to a processed farm-cultured catfish business

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35/ Morrison, pp. 4-5.

in 1968. These were state and federal tax and weight laws, federal wage and hour laws, fair employment practices laws, and the federal food, drug and cosmetic laws. Mr. Oravetz also stated that the cooperative groups examined all the legal issues and related laws and were easily resolved because the laws were either a part of the standard operating procedure of a good business operation or concurrent with good management practices. Mr. Oravetz further pointed out that because the cooperative groups were acting and thinking in terms of a cooperative business venture that many of the normal legal issues and their attendant laws were not applicable. For example, farm cooperative businesses are not subject to the Sherman Anti-Trust Act, Clayton Act, Robinson Patman Act, etc. 36/

It should be pointed out that the political climate in which a business operates may at times exert an environment of certainty or uncertainty of the success of that business. The political climate is especially important in light of its contribution to government continuity and stability which has been dominant in the U.S. since modern industrialization. The political dominance in the two-party system of government may also be a factor conducive or harmful for a business enterprise. This could be especially true when an area represents an opposing political party (Democrat or Republican) that is dominant in federal or state regulating power. W. F. Anderson, a director of the Catfish Farmers of America, pointed out that the Mississippi Delta Region has by tradition represented the Democratic party and suggested that the processed farm-cultured catfish cooperatives

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36/ This information was reported to A. K. Pippin in a telephone interview with Charles A. Oravetz, a fishery marketing specialist with the U.S. Department of Commerce, March, 1975

would not have been treated as favorable in providing financial assistance to the new business if the U.S. Congress had been predominantly Republican in 1968. 37/ Although all businesses are not subject to the influences of a Democratic or Republican political climate, it is indicative that the cooperative farm-cultured catfish groups were planning in an environment of reciprocal political influences. A graphic summary of the external non-economic factors as they related to the processed farm-cultured catfish business in 1968 is given in Figure 3. The summary tends to indicate that the external non-economic factors which were attendant to processed farm-cultured catfish production were neither favorable or unfavorable.

External non-Economic Factors	Processed Farm-Cultured Catfish Influence		
	Favorable	Unfavorable	Unknown
Socio-Cultural			
1. Regional preference			X
2. Race			X
3. Age composition of household		X	
4. Occupational groups		X	
5. Formal education of homemaker		X	
Religious-Ethical			
1. Religious preference			X
Political-Legal			
1. Laws			
(A) State	X		
(B) Federal	X		
2. Political-environment	X		

Figure 3: Summary of External Non-Economic Factor Influences on Processed Farm-Cultured Catfish Production, Mississippi Delta Region, 1968

37/ Oravetz, telephone interview, March 1975.

The external non-economic factors of regional preference, race, and religion were business influences that the processed farm-cultured catfish cooperative planning groups were aware of but did not thoroughly investigate. In addition, the non-economic factors of age composition of the household, occupational social group, and formal education of the homemaker were reported to the fish and cultured fish industry by researchers and were not considered by the cooperative groups nor were they researched and related to processed farm-cultured catfish subsequently. These unfavorable and unknown areas of non-economic influences tend to indicate a very weak and inadequate planning procedure on the part of the processed farm-cultured catfish cooperative groups.

CHAPTER II
MANAGEMENT ASSUMPTIONS, COMPANY OBJECTIVES, FORECASTS, AND STRATEGY

Once the economic-technological, socio-cultural, religious-ethical, and political-legal external influences of a proposal are analyzed, it becomes necessary to initiate the third step of the environmental appraisal section of the (MPM). This sequential step consists of making assumptions regarding the future about variables or influences which cannot be predicted with complete accuracy and over which control is not absolute. These assumptions are essential because they serve as a base or guide for all subsequent planning actions of a new business or a new business venture.

Assumptions

The processed farm-cultured catfish cooperative groups based their assumptions regarding the processed farm-cultured catfish business in 1968 on the favorable, unfavorable, and unknown aspects of their preliminary external environmental appraisal. The assumptions made about the future by the cooperative groups were as follows:

1. Land is available at a reasonable cost in the Mississippi Delta region with the essential water and water holding properties.
2. Capital is available to legal farm cooperatives for long time periods (40 years) and at a cost (4 1/8 percent) that will permit the production of processed farm-cultured catfish at a reasonable cost.
3. Labor is available in a sufficient quantity and of desired quality in the Mississippi Delta region for processed farm-cultured catfish production.

4. The quantity and quality of management essential for processed farm-cultured catfish production is available and adequate to assure the success of the business venture.
5. The Mississippi Delta Region has available local and regional population centers of adequate size to provide an adequate demand for processed farm-cultured catfish initially.
6. The regional population centers are of sufficient size to have available carrier transportation for transporting the product to the market centers.
7. Local restaurants, grocery stores, supermarkets, fish markets, and wholesalers within a 50-mile radius and regional wholesalers within a 125-mile radius will provide adequate market channels for processed farm-cultured catfish initially.
8. The processed farm cultured catfish will be demanded and marketed mostly in the traditional form (fresh skinned, gutted, collarbone and/or head removed).
9. The superior quality of processed farm-cultured catfish will be a sufficient base for promoting the product.
10. Processed farm-cultured catfish can be produced at a cost that would permit the retailer to sell the product at approximately 80 units per pound and make a fair profit.
11. The superior quality processed farm-cultured catfish at 80 cents per pound will be competitive in the market place with the lower priced lower quality wild imported and domestic fish.

12. Socio-cultural factors of regional preference and race are favorable for processed farm-cultured catfish production in the Mississippi Delta Region while the socio-cultural factors of occupational age composition of the household, and formal education of the homemaker are insignificant in processed farm-culutred catfish production.
13. Religious preference in the Mississippi Delta Region is favorable for processed farm-cultured catfish production.
14. Federal and state laws are complimentary to processed farm-cultured catfish production in the Mississippi Delta Region.
15. The political environment (government stability and party affilitation) are favorable for production of processed farm-cultured catfish in the Mississippi Delta Region.

Company Objectives

After the assumption bases are made for a new business, the fourth step of the environmental appraisal is applicable. It consists of stating in general terms the objectives of the new business enterprise and expresses management's fundamental intentions and provides guidelines and standards of performance for future growth and development of the business.

Although the objectives of the processed farm-cultured catfish cooperative groups were not documented as statements of intention in 1968, the objectives implied throughout literature on the processed farm-cultured catfish cooperative group investigations and analyses were:

1. To provide a high quality processed farm-cultured catfish to the comsumer at a reasonable price.
2. To provide employment to the rural poor so that their economic and social position will be improved.
3. To maintain a cooperative business that will make sufficient returns to pay plant expenses and return a fair profit to its membership.
4. To obtain a fair share of the fish market through superior product quality and taste.
5. To improve the competitive position of processed farm-cultured catfish in the market place relative to red meats.

General Economic Forecast

Step five of the environmental appraisal section of the (MPM) considers the general economic conditions of the national, regional, and local economy. This section of the appraisal provides management with an indication of the expected future prosperity and welfare of businesses and their employers for a short run time period. In 1968 the processed farm-cultured catfish cooperative planning groups were not primarily concerned with local economies since their proposal involved the Mississippi Delta Region. Therefore, the cooperative planning groups concentrated their attention on national and regional economic conditions. The general economic conditions that were specifically documented as being primary to the planning groups were interest rates, availability of money, per capita income, and unemployment.

Other economic conditions that related to the possible success of the processed farm-cultured catfish business in 1968 were inflation and the general economic growth. However they were not documented as significant forces affecting business. However, it will be shown briefly how inflation and general economic growth were economic conditions worthy of consideration and why they may have been treated with irrelevancy.

In 1968 availability of money and interest rates for the total agricultural sector of the United States was very favorable. Major farm credit leaders such as the Federal Land Bank Associations, Farmers Home Administration and large insurance companies had ample funds and were all lending throughout the U.S. at interest rates of 6 percent per annum and below. Short term agricultural credit or production money was available and at 7 1/2 percent per annum from production credit associations and many local banks. These interest rates represented a very stable monetary market in that during the period between 1961 and 1968 these rates had increased by less than one percent. For example, the Federal Land Bank Associations throughout the U.S. had only increased their interest rates from 5 1/2 to 6 percent, while the Farmers Home Administration had increased their interest rates to independent farm producers from 4 1/2 to 5 percent. 38/ For the processed farm-cultured catfish cooperative groups in 1968 money and interest rates were even more favorable than for the agricultural sector as a whole if required conditions of the Office of Economic Opportunity were met, i.e., large sums of money were available to legally formed

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38/ Federal Land Bank Association of Russellville, Russellville, Arkansas, 1975.

farm cooperatives for a maximum of 40 years at 4 1/8 percent interest if the cooperatives were established in a region that improved the economic and social position of the nation's poor, expecially the rural poor. 39/

Per capita income in the United States increased steadily from $1496 in 1950 to $2746 in 1965. In the Mississippi Delta region per capita incomes were considerably lower although they had also steadily improved between 1950 and 1965. For example, from 1950-65 per capita income for Arkansas increased from $825 to $1845, for Mississippi the increase was from $755 to $1608, for Louisiana the increase was from $1120 to $2084, for Alabama the increase was from $880 to $1923. Comparable changes were prevalent throughout the Mississippi Delta region. Although the picture of per capita income in the Mississippi Delta Region was not impressive relative to the national average or other states such as California and New York, there were two favorable points that the processed farm-cultured catfish cooperative planning groups had to work with. First, percentage increases in per capita income from 1950 to 1965 had been greater in the Mississippi Delta Region than other sections of the U.S. Secondly, because of the low per capita income in the Delta region, the processed farm-cultured catfish business would be a beginning to improve the low per capita income of the region. 40/

During 1968 the national employment picture was very favorable for the U.S. economy. From 1961 to 1968 the average annual rate of

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39/ Schubert, p. 1, and VI 5.

40/ U.S. Department of the Interior, p. 2 and U.S. Department of Commerce, Statistical Abstract of the United States, 1969. 90th ed., (Washington, U.S. Government Printing Office, 1969), p. 320.

employment growth was 2.1 percent and was three times the average rate of increase in employment during the previous fifteen years. Unemployment for the total economy steadily decreased from approximately 7 percent in 1961 to a low of approximately 3.8 percent in 1968. 41/

In the Mississippi Delta region the unemployment and growth of employment was quite different from the national outlook but favorable in terms of processed farm-cultured catfish production. Unemployment in 1968 throughout the Mississippi Delta region was estimated to be somewhat above 6 percent with a high percentage of the unemployed being unskilled and semi-skilled workers of minority groups. 42/ The average annual rate of employment growth for the Mississippi Delta region between 1961 and 1968 approximated 4 percent which was the highest rate of employment growth that occurred in the U.S. during that time for any geographical region. 43/

Both the national and regional unemployment and growth of employment exhibited favorable conditions for processed farm-cultured catfish production in the Mississippi Delta region. Nationally the conditions were favorable because of the continued decrease in umemployment and because of the steadily increased annual growth of employment. Regionally the conditions of a high rate of unskilled and semi-skilled unemployed workers and a high and steadily increasing unemployed workers and a high and steadily increasing annual growth of employment

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41/ U.S. Department of Labor, Manpower Report of the President, (Washington; U.S. Printing Office, 1969), pp. 26-27, 58-59.

42/ U.S. Department of the Interior, pp. 2-3.

43/ U.S. Department of Labor, pp. 34-35

were also favorable for processed farm-cultured catfish production. Although a high rate of unemployment is usually looked on as indicating caution to businessmen, the cooperative groups found it favorable in the light that the new business of processed farm-cultured catfish would be labor intensive for unskilled and semi-skilled workers, the crux of what was available in the Mississippi Delta Region for employment.

Inflation and general economic growth of the economy may have been considered by the processed farm-cultured catfish cooperative planning groups in 1968, but they were not documented as having relevancy. However, historical data on the economy indicates that the insignificant treatment of inflation and general economic growth by the cooperative planning groups resulted not from poor analysis but from favorable expectations based on their confidence in the U.S. government to control the economic environment and the low annual rate of inflation associated with a steadily growing real GNP that existed from 1961-68. From 1961-68 the average annual rate of inflation was approximately 2.7 percent. 44/ Although inflation had slowly increased during this time period, the Manpower report of the President reported that some inflationary pressures were accumulating as a result of high levels of government spending and high levels of employment in the preceding years. These pressures did not distract the American people because as the report pointed out, fiscal and monetary restraints by the government during the era (1961-68) had held the inflationary pressures in check and at the same time allowed

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44/ Roger L. Miller, Economics Today - The Macro View, (New York: Canfield Press, 1974), p. 271.

the economy (real GNP) to grow at a rate of 5 percent annually. 45/ The Manpower Report of the President indicated that the period from 1961-68 was an era of high prosperity for the American people. 46/ Miller pointed out the "the prosperity during the sixties, which was uninterrupted for almost ten years, was the longest period of substained rise in business activity that we have ever had." 47/ Undoubtedly the low level of inflation and economic growth from 1961-68 contributed to the substained prosperity of business activities and mentally influenced the processed farm-cultured catfish planning groups decisioning in 1968, i.e., inflation and economic growth throughout 1961-68 was so favorable for the whole business scene that the American people's expectation was continued future prosperity with a controlled nominal amount of inflation.

In 1968 the overall economic condition of the U.S. economy was one of continuing prosperity. For the processed farm-cultured catfish cooperative planning groups all indicators (interest rates, money availability, per capita income, unemployment, inflation and economic growth) projected a definite go for the business venture.

Industry Forecast

The industry forecast which is step six of the environmental appraisal section of the (MPM) provides business planners with a future assessment of the industry's operating capabilities. For the planned

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45/ U.S. Department of Labor, pp. 26-28.

46/ Ibid, p. 59.

47/ Miller, p. 140.

farm-cultured catfish business this step involves projecting the outlook of the industry in light of the favorablemess of the preceding steps and the expected availability of future production resources.

Since processed farm-cultured catfish represented a completely new venture, data for projection purposes was not abundant and the planning groups were forced to make their projections based on residual estimates. In 1968 it was estimated that 11,000 acres were devoted to cultured catfish production for the live fish market. Of this production about 1000 acres or 1.2 million pounds represented an excess that was available for the processing market. The 1969, 1970, 1971 projections were also based on 10,000 acres supplying cultured catfish in sufficient quantities to the live market leaving the the excess of harvested acreage to the processing industry. With the anticipated growth in harvested acreage of cultured catfish the projection of poundage that could be processed was approximately 2 million pounds in 1969, 8 million pounds in 1970 and 18 million pounds in 1971. 48/ These pounds of live cultured catfish represented about 720,000 pounds of finished processed cultured catfish in 1968, 1.2 million pounds in 1969, 4.8 million pounds in 1970, and 10.8 million pounds in 1971. 49/ Although these figures were not impressively large for a new industry, it was projected by Mitchell and Usry that a latent market existed for farm-cultured catfish which could not be satisfied until live production of cultured catfish reached 250

48/ J. E. Greenfield, Economic and Business Dimensions of the Catfish Farming Industry, (St. Petersburg, Florida; Bureau of Commercial Fisheries), p. 7.

49/ U.S. Department of the Interior, p. 22.

million pounds per year. 50/ In light of these projections potential industry sales of catfish should have appeared impressive to the cooperative planning groups; i.e., all the processed farm-cultured catfish that was projected to be produced would not satisfy the strong demand for several years. In fact, Mitchell and Usry projected the per capita consumption of cultured catfish to reach 7 pounds by 2020. 51/ With an excessive projected demand for processed farm-culutred catfish for several years associated with an expected growing but limited supply and a highly prosperous economy, the outlook for the new industry necessarily had to be one of optimism to the cooperative planning groups.

Target Markets

The seventh step of the environmental appraisal section of the (MPM) involves identifying the potential target markets in which a new product will be favorably accepted and purchased.

The processed farm-cultured catfish cooperative planning groups determined through investigation that a broad potential target market existed that could generally be defined as the Southeastern one-fourth of the U.S. This was true because it was a geographical area where catfish was native to the rivers, streams, and lakes and an awareness of catfish had evolved. This area was also perceived by the cooperative planning groups to form the general parameters of a future

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50/ Travis E. Mitchell and Meda J. Usry, Catfish Farming - a Profit Opportunity for Mississippians, Mississippi Research and Development Center, Jackson, Mississippi, (August 1967), p. 6.

51/ Ibid, p. 6.

target market as the processed farm-cultured catfish industry matured. 52/ More immediate, the cooperative groups determined that the primary target markets for the new product would be residents of the Mississippi Delta region. Not only was this an area with a high level of awareness and traditional catfish consumption, but it was an area endowed with the more favorable factors of production which would lead to low production costs and improve significantly the local economic environment.

Company Sales Forecasts

Once the target market was designated by the cooperative planning groups the eighth step of the environmental appraisal section of the (MPM) was applicable. This step consisted of making the sales forecast for the individual firm. Since no commercial processed farm-cultured catfish production facilities were in existence during this stage of the planning process, projected sales were estimated to be the total product available to the industry in 1968, 1969, 1970, and 1971 which was 720 thousand, 1.2 million , 4.8 million, and 10.8 million pounds respectively. 53/ The cooperative planning groups anticipated one plant to be in operation in 1968, three in 1969 and additional plants as the industry expanded. The plant to be in operation in 1968 was assumed to have sales of 720 thousand of processed catfish or the total for the industry and by the fifth year of operation

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52/ Hattaway, 1971.

53/ U.S. Department of the Interior, p. 22.

The initial plant would be processing and selling 3,510,000 pounds of product for approximately $2,281,500. 54/

The firm's sales forecast completes the environmental appraisal section of the (MPM). Its completion also represents a decisioning point for planners. Using all the information amassed from the environmental appraisal, planners must analyze the overall favorability of the initial proposal and determine whether the planning process should be continued or terminated.

For the processed farm-cultured catfish cooperative planners, the environmental appraisal indicated some areas of unfavorableness and weakness which could affect the success of processed cultured catfish production. Specifically, these areas of unfavorableness and weakness involved product competition, quantity and quality of management; the socio-cultural factors of occupational groups, age composition of the family, formal eduction of the homemaker, and race; the religious-ethical factor of religious preference. These areas represented only a meager portion of the appraisal information of which the balance indicated a high degree of favorability toward proceeding with the plans to produce processed farm-cultured catfish. The cooperative planning groups made the decision to continue the proposal and proceeded to make plans for the firm's administrative strategy.

Administrative Strategy

The last major section of the (MPM) is the administrative strategy planning section and it is designed to illustrate the steps that

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54/ Schubert, p. VI 4 and Hattaway, 1971.

must be employed to develop a firm's operating procedures to accomplish the objectives that a firm has set for itself. These steps are: the manufacturing strategy, finance strategy, personnel strategy, and marketing strategy.

Since the processed farm-cultured catfish business was an entirely new venture, the cooperative planning groups made their operating plans by integrating the total environmental appraisal analysis with a plant capacity of adequate size to process a fair share of projected production, to immediately supply the market within a 125-mile radius of the plant for a continuous basis with the expectations to supply more distant markets within five years, and to provide economies of scale in the processing and marketing of the product. 55/ The size of plant and facilities that the cooperative planning groups determined that would optimize the criterion of an adequate sized operation was one that could reach peak production of 3,510,000 pounds within five years.

Each strategy step was treated as an independent activity in order to facilitate reconstruction of the 1968 planning process for the production of farm-cultured catfish. However, it should be emphasized that the strategies are interdependent and require continuous coordination for a functionally balanced operating business.

Manufacturing Strategy

Planning for the manufacturing strategy by the cooperative groups in 1968 was centered around the self-imposed constraint of a

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55/ Schubert, pp. V 5, V 10 and Hattaway, 1971

3,510,000-pound capacity plant for processing farm-cultured catfish. With the 3,510,000-pound envisioned plant capacity the manufacturing strategy of the cooperative planning groups became a means of resource appropriations whereby a superior quality processed farm-cultured catfish could be produced at a low cost and transmitted to the target market consumers with a high degree of product satisfaction.

The first consideration by the cooperative groups in planning production strategy was the manpower quality and quantity essential for facility operations. In the investigation of the external economic factors that were believed to have an influence on the new production venture the cooperative planning groups determined that an abundance of unskilled and semi-skilled labor was available in the Mississippi Delta region and for the production of processed farm-cultured catfish the job positions would require largely laborers who were unskilled and semi-skilled. Although the quality and quantity of management essential for a successful operation was recognized, it was assumed by the cooperative planning groups that both the quality and quantity was available for processed farm-cultured catfish production in the Mississippi Delta region. With these data it was projected that at capacity production of 3,510,000 pounds of processed product the manpower requirement would be:

1 manager

1 biologist

38 laborers 56/

56/ Schubert, p. VI 4. Laborers were estimated by utilizing the labor allowance per pound of live weight, the $1.60 per hour wage rate of 1968, and a 40 hour week. Labor cost of dressing 1.8 cents per pound X 22,500 pounds of daily live weight processed = $405.00 labor cost for dressing fish ÷ by daily wages per laborer $10.80 = 37.5 laborers

It was estimated by the cooperative planning groups that the plant facilities should consist of the following:

Building (excluding freezing area)	Square Feet	Dollars
25 dressing stalls at 60 sq. ft. each	1,500	
Packing, packaging, and shipping area	1,000	
Research laboratory	400	
Offices	600	
Miscellaneous and storage	300	
Total square feet	3,800	30,400
Fixtures		
25 dressing stalls with sinks		2,500
Freezing area		
3,400 square feet (700,000 dressed capacity)		68,000
Equipment		
Office, dressing, shipping, packaging, research, ice machine, and miscellaneous		18,000
Land		
Building site and holding facilities 6 acres		13,200
Transportation		
1 refrigerated trailor 30,000 pound capacity		3,500
1 tractor		2,500
1 delivery truck non-refrigerated		2,500
1 3/4 ton truck or car		2,500
Total investment for processing facilities		$143,100. 57/

The cooperative groups production plans were fairly comprehensive; however, the decision of where in the Mississippi Delta region to locate the plant was not documented as being made during this phase of planning. Four sites in the Mississippi Delta were under consideration and all met the prerequisites necessary for successful processed farm-cultured catfish production as well as the conditions set out by the Office of Economic Opportunity relating to improving the

57/ Schubert, p. VI 2.

economic and social status of the rural poor. The sites being considered by the cooperative groups were Little Rock, Pine Bluff, and Texarkana, Arkansas and Jackson, Mississippi. 58/

Financial Strategy

The financial strategy of the processed farm-cultured catfish cooperative planning groups during 1968 was particularly concerned with the source, cost of money, and the amount of money essential for the success of the 3,510,000-pound capacity processing plant that was planned. Since the administrative strategies must be coordinated continously to assure proper balance between the operating functions of a business, when a decision to build a specific sized plant with its attendant manpower and equipment, a portion of the financial planning is completed, i.e., the basic capital requirements are known when resource costs are related to the physical operating resources. The cooperative planning groups determined that $143,100 would provide the basic resources to begin operating at capacity (See Manufacturing Strategy, previous section). In addition, it was determined that the average annual working capital requirement would be approximately $15,000 bringing the total capital requirement to $158,100 for capacity operation.

In the investigation and analysis of the external economic factors which could influence the new business proposal the cooperative groups determined that an abundance of capital at a low cost was available from the Farmers Home Administration through the Office of Economic Opportunity if the new business would improve the economic and social position of the poor, particularly the rural poor.

58/ Schubert, p. VI 14.

The criterion of establishing that the processed farm-cultured catfish business would improve the economic and social position of the poor and rural poor in the Mississippi Delta region were provided which removed the obstacle of conditional barriers. This accomplishment assured ample capital at a low interest rate for the operating functions of the envisioned legal farm cooperative business.

Since the plans of the cooperative groups projected a full capacity operation in five years, plans were made to utilize interim short term 5 1/2 percent financing during the building and implementation period (1968, 69, 70). 59/ After the three-year period, plans were to convert the financing to a 40-year loan at 4 1/8 percent. 60/ The reasoning for this strategy was to assure the new business of adequate long term financing in case planned appropriations were incorrect, i.e., if planned appropriations were inadequate, additional capital could be borrowed without duplicating the costs and efforts of long term financing procedures. Also, if the planned appropriations were more than adequate, the overage would not be included in long term financing arrangements.

Through coordination and integrative planning of manufacturing, financing, personnel, and marketing the cooperative groups were able to develop an estimated annual income and expense statement of the business at ultimate capacity. The statement was as follows:

59/ Schubert, pp. VI 7-8.

60/ Schubert, p. VI 8.

Processed Farm-Cultured Catfish

Sales (to market outlets)	
5,400,000 pounds live weight times 0.65 percent (percentage yield after processing)	
3,510,000 pounds dressed weight at average of 0.65 cents per pounds	$2,281,500
Cost of Sales	
Management and technical assistance	
1 business manager at $15,000 per year	$15,000
1 biologist at $11,000 per year	11,000
Research, travel, and miscellaneous	10,000
Transportation of fish to processing plant	
5,400,000 pounds live weight at 0.4 cents per pound	21,600
Processing	
Dressing (fully) 5,400,000 pounds live weight	
Labor and miscellaneous at 1.8 cents per pound	97,200
Packaging in ice and crating (for fish shipped fresh)	
4,320,000 pounds live weight at 0.5 cents per pound	21,600
Freezing and packaging	
1,080,000 pounds live weight at 2.25 cents per pound	24,300
Transportation to Markets	
5,400,000 pounds live weight at 1.0 cents per pound	54,000
General and Administrative Expenses - Central Complex	
Heat, light, telephone, accounting, etc. at 1.1 cents per pound live weight	59,400
Total Cost of Sales	314,100
Gross Margin	$1,967,400

Annual Income Available to Farmer

Gross Margin	
Marketing of channel catfish	$1,967,400
Debt service (principal and interest) a/	9,188
Net Income Available to Farmer-Members	$1,958,212 b/

a/ Assuming 100 percent financing of the cooperative's investment requirements.

b/ Schubert, pp. 4-5

Since the income and expense statement was estimated for a legal farm cooperative business, the projected net income of $1,958,212 represented a gross return on investment before plant depreciation to cooperative producers of approximately 14 percent. 61/ During 1968 and 1969 the gross returns on investment to cooperative producer members were expected to be negative while in 1970 and 1971 the gross returns were expected to be approximately 6 and 9 percent respectively. 62/

Personnel Strategy

In the personnel strategy step of the administrative section of the (MPM) plans are made regarding the number, kind, and cost of the personnel that is needed to accomplish the business objectives set forth in the environmental appraisal section of the (MPM).

For the processed farm-cultured catfish planning groups this phase of the planning process required considerable coordination, but the activity of planning itself required a minimum of labor decision making. During the environmental appraisal of the external economic factors that were believed to have a degree of influence on the production of farm-cultured catfish, it was determined that the quality and the quantity of labor available coincided with the needs of the new business proposal. That is, the nature of the processed cultured catfish business required mostly operative production personnel that were unskilled or semi-skilled. Too, a large force of the unemployed in the Mississippi Delta region possessed these job qualifications. In addition, the new business venture that was envisioned and planned for was rather small in magnitude relative to business in other

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61/ Schubert, p. VI 14.

62/ Schubert, p. VI 10.

industries thereby making manpower requirements, especially management very small. For example, the new business venture planned was of a size that the management (one manager) was envisioned as capable of accomplishing the production, finance, personnel, and marketing functions.

Since management was planned to be small in quantity the essential quality of management for the production facilities was assumed to be available at a projected salary of $15,000 per year. How this figure was calculated by the cooperative planning groups was not documented in literature, but according to the Security Employment Office, 63/ the salary appeared to be substantial for a small agricultural business in 1968. As previously pointed out once the physical plant has been determined portions of the various strategies became a matter of coordinating functional plans. In 1968 when the physical plant facilities were determined to provide a capacity production of 3,510,000 pounds of processed farm-cultured catfish the personnel essentials became an activity of selecting the number (approximately 38) of operative personnel necessary for the production capacity. Also, since the operative personnel were laborers for the assembly line, the planning for labor cost became an activity of applying the minimum wage rate ($1.60 per hour) and coordinating the cost with the finance function.

Marketing Strategy

In 1968 the processed farm-cultured catfish planning groups included in their marketing strategy the marketing components of

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63/ Security Employment Office, Russellville, Arkansas 72801, 1975.

market area, channels of distribution, product form, packaging, promotion, and price. However, it should be emphasized that all the components were planned for in light of not only the firm's objectives and a 3,510,000-pound capacity processing facility but also in light of forecasts that projected a U.S. latent market for 250 million pounds of live weight farm-cultured catfish annually and a potential U.S. per capita consumption of 7 pounds of processed farm-cultured catfish annually.

Although the Mississippi Delta region had been pinpointed as a broad target market by the cooperative planning groups as a result of traditional familiarity and awareness of catfish nativity to the region, the immediate marketing strategy was to locate the processing plant within 125 miles of a medium or large sized city which included Little Rock, Pine Bluff, and Texarkana, Arkansas and Jackson, Mississippi. The reasoning was that the primary market area with a large population center would provide an adequate and growing demand, and it would also provide a more adequate lower cost transportation for transporting the new product.

As a result of the high level of geographical awareness of catfish and traditional catfish acceptance, a simple and straight forward channel of distribution, product form, and packaging strategy was planned by the cooperative groups. The channels of distribution were planned to be local restaurants, grocery stores, supermarkets, fish markets, and wholesalers within a 50-mile radius of the processing plant and regional wholesalers within a 125-mile radius. For the product strategy the cooperative groups relied heavily on traditional purchasing patterns in the Mississippi Delta for catfish

(whole, skinned, gutted, collarbone and/or head removed). However, since research involving freezing had proved very promising, plans included making available both fresh and frozen product forms. From market surveys that had been conducted the cooperative groups determined that many of the distribution channels, particularly supermarkets would pay a premium for individually packaged fish preferably in the 1-1 1/4 pound range. Therefore the product strategy of the cooperative groups was to provide individually packaged processed product which weighed from 1-1 1/4 pounds. The strategy also included packaging the product in a see-through cellophane wrap. Kroger Company's district meat buyer located at the headquarters office in North Little Rock, Arkansas pointed out that this packaging technique was initially used because the average consumer was more likely to buy when a product's appearance was good and could be observed rather than displayed in an attractive package which could not be observed. Too, the cooperative planning groups envisioned the individually packaged product as an aid to differentiate the processed farm-cultured catfish on the basis of superior quality which was the totality of their promotional strategy. During the planning of promotional strategy the cooperative groups did not budget funds specifically for product promotion but instead relied on the concept that a high protein fed product would produce a superior quality product with a good taste and with a latent demand the product would sell itself.

The pricing strategy planned by the cooperative groups was guided primarily by the projected production costs of processed farm-cultured catfish and perceived superior quality of the product. Since legal farm cooperatives are by law non-profit organizations, the planning groups were concerned with a price strategy that would assure the

producer cooperative member a fair return on his investment, cover the operative production costs of the production facility, and place the product in the hands of the retailer so that it could be sold to the consumer at a fair price. By paying the cooperative members 36-38 cents per pound live weight for cultured catfish the producer would receive a fair return on his investment of approximately 14 percent. Operating expenses were estimated to be about 7 cents per pound live weight. From these costs the cooperative groups envisioned selling processed farm-cultured catfish at 65 cents per pound dressed to retailers with the ultimate consumer paying about 80 cents per pound. Although the price of 80 cents per pound was above the consumer price of processed imported and domestic wild fish (as indicated by prices paid to the producer and by observed import sales) 64/ the cooperative planning groups believed that the superior quality and taste that would result from feeding farm-cultured catfish a high protein diet would more than compensate for the price differential.

Functional Objectives

After the functional strategies (manufacturing, financial, personnel, and marketing) have been planned and coordinated and integrated with the environmental appraisal section of the (MPM), the fifth step of the administrative section of the (MPM) should be implemented by stating the functional objectives of the proposed business.

This step of the administrative section of the (MPM) provides planning groups with an overall view of the operating functions of the proposed business and it gives the planners a final checkpoint

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64/ Schubert, p. III 5 and U.S. Department of the Interior, p. 27.

to review the balance and consistency of the functional objectives in light of the firm's stated objectives.

In 1968 the major functional objective of the processed farm-cultured catfish planning groups stated or implied were as follows:

Manufacturing Objectives

1. To produce a superior processed farm-culuted catfish product at the lowest possible cost.
2. To grow to ultimate capacity and operate on a continuous basis.

Finance Objectives

1. To provide ample capital for construction and operating the plant facilities.
2. To provide interim and long-term capital at the lowest possible cost.
3. To provide farm cooperative producer members with a fair return on their investment.

Personnel Objectives

1. To provide the quantity of management and operate personnel consistent with the ultimate plant production capacity.
2. To provide the quality of management and operative personnel essential for the job positions.
3. To provide an economic incentive to the management and operative personnel consistent with their job position.
4. To improve the economic and social position of the poor area residents through providing employment opportunities.

Marketing Objectives

1. To sell the total plant production of cultured catfish through local restaurants, grocery stores, supermarkets, fish markets, and wholesalers within a 50-mile radius of the plant facilities and through regional wholesalers within a 125-mile radius.
2. To provide the product form and packaging consistent with geographical preference.
3. To promote processed farm-cultured catfish on the basis of superior quality and taste.
4. To sell processed farm-cultured catfish and its superior quality at a price to the retailer so the price and product will be competitive with lower priced, lower quality imported and domestic wild fish.

Implementation

At this stage of the (MPM) the planning groups must determine the consistency and balance of their total planning process and decide whether the proposal should be implemented or abandoned. The cooperative planning groups made the decision to form a legal farm cooperative and to implement the plan at Pine Bluff, Arkansas and proceeded accordingly to their administrative strategy plans. 65/ Simultaneously cooperative planning groups at Dumas, Arkansas and Quitman, Georgia formed legal farmer cooperatives and implemented similiar plans. During 1968 the plants at Pine Bluff and Dumas became operational and began processing farm-cutured catfish. In 1969 four additional plants

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65/ J. E. Greenfield, Some Economic Characteristics of Pond Raised Catfish Enterprises, Bureau of Commercial Fisheries, Division of Economis Research, Working Paper No. 23 (June, 1969), p. 3.

commenced operations although all were not cooperatively directed and in 1970 six additional facilities became operational. 66/ All of these processing plants were in the southeast one fourth of the U.S.; however, eight were located in the Mississippi Delta region. 67/

Evaluation and Adjustment

Historical documentations indicate that serious problems begin to appear in the processed farm-cultured catfish industry as early as 1969 with unintentional inventory buildups and declining sales. 68/ Along with these problems a multitude of other problems developed throughout 1969 and 1970 and set in motion an evaluation of the original planning process. The evaluation step of the administrative strategy section of the (MPM) as it related to the processed farm-cultured catfish business represented a planning phase of alternative corrective actions followed only by the final adjustments and recycling the planning process.

Although the cooperative planning groups evaluated an re-evaluated multiple areas that were not contributing to the firm's overall objectives, the marketing strategy of the processing firms was specifically designated as requiring primary adjustments in the area of consumer preferences and demand identification. 69/

66/ U.S. Department of Agriculture, The Farm Index, (Washington: United States Printing Office, May, 1972), p. 12.

67/ Bureau of Wildlife and Fisheries, Little Rock, Arkansas, 1971

68/ U.S. Department of the Interior, p. 24.

69/ U.S. Department of Commerce, A Statistical Reporting System for the Catfish Farming Industry, Methodology and 1970 Results, Technical Assistance Project No. 99-6-09044-2, Economic Development Administration (December, 1972), p. 91.

The first objective of this study was to evaluate the processed farm-cultured catfish business as it existed in its embryonic stage in terms of the (MPM) presented in Figure 1. Although many planning weaknesses developed in the post operational stage of implementing the processed farm-cultured catfish business that were beyond the control of the cooperative planning groups, the evaluation brought to light areas of weaknesses, whether by error, miscalculation, or lack of information that were unfavorable influences toward the success of the processed cultured catfish business. The area of weakness that was most notable encompassed consumer preferences and demand indentification and paralleled the area of marketing specified by the U.S. Department of Commerce as requiring corrective action (see Figure 3).

These inadequacied provided the basis for the second objective of this study which was to focus on the marketing strategy section of the (MPM) and examine the managerial strategy of segmenting the processed farm-cultured catfish market and provide management with decisioning information essential for the continuity and growth of the industry. To accomplish this purpose food markets were utilized to specifically (1) determine the relationship between the number of processed farm-cultured catfish sales and selected economic and socio-economic determinants of consumer market behavior; (2) to examine through the use of a graphic rating scale the relationship between selected economic and socio-economic determinants of consumer market behavior and consumers satisfaction with processed farm-cultured catfish as expressed by attitude.

Definition of Terms

Throughout the balance of this study several terms shall be interpreted to have the following meaning.

Consumer--"An individual who purchases, or has the capacity to purchase goods and services offered for sale by marketing institutions in order to satisfy personal or household needs, wants or desires." 70/

Consumer preference--"An attitude which refers to a situation in which a consumer or groups of consumers purchase a product that is different only in attributes and is the most desirable of two or more alternatives." 71/

Consumer attitude--"The relatively lasting manner whereby the beliefs of consumers are organized toward certain market objects, events or situations." 72/

Product--"A complex of tangible and intangible attributes, including packaging, color, price, manufacturer's prestige, retailer's prestige, and manufacturer's and retailer's services, which the buyer may accept as offering satisfaction of wants and needs." 73/

Product form--In this study product and product form are used interchangeably.

70/ C. Glenn Walters and Gordon W. Paul, Consumer Behavior, (Homewood, Illinois: Richard D. Irwin, Inc., 1970), p. 4.

71/ John B. Matthews, Jr., et. al., Marketing: An Introductory Analysis, (New York: McGraw-Hill Book Company, 1964), pp. 156-157.

72/ Walters and Paul, p. 296.

73/ Ibid, p. 458.

Homemaker--A person customarily in charge of food buying and preparation.

Family--"Two or more persons living together in a housing unit who are related by blood, marriage, or adoption." 74/

Household--"Includes families and primary individuals living alone or with non-relatives in a housing unit." 75/

Organization of the Study

In Chapter III the concept of market segmentation that guided the research of the study is presented. The experiment procedure is considered in Chapter IV. In addition, the general working hypotheses of this study are formulated and stated. Too, the limitations of the study are stated and the statistical techniques used to establish segmental differences are described. In Chapters V and VI, respectively, the selected economic and socio-economic determinants of consumer market behavior are analyzed and interpreted as they relate to sales and consumer satisfaction of farm-cultured catfish. Finally, Chapter VII contains the summary, suggestive inferences and recommendations of the study.

74/ U.S. Department of Commerce, Bureau of the Census, U.S. Census of Population, 1970, Arkansas, PC (1)-B5, (Washington: U.S. Government Printing Office, 1972), Appendix B, p. 6.

75/ Ibid., p. 6.

CHAPTER III
MARKET SEGMENTATION

Overview of Market Segmentation

The concept of market segmentation was first developed as an integral part of economic theory with the purpose being to show how a firm selling a homogeneous product is a market characterized by heterogenous demands could maximize profits. The theory shows that maximum profits can be achieved if the imperfect competitor uses consumers' marginal responses to price to define mutually exclusive submarkets and sets price or output so that the marginal profit achieved in each submarket is equal. 76/ Although market segmentation was sourced in the theory of imperfect competition, it was not until the mid 1950's and the advent of organizational emphasis shifting from a production to a marketing economy that market segmentation took on a connotation that encompassed a broad range of marketing variables in addition to price. The transition shifted management's attention to examining at depth activities which were coincident with the new marketing concept. 77/ One of the most striking developments resulting from the market activities examination was the ground-breaking article of Wendell Smith's that created an interest and a mental environment for market segmentation strategy. 78/ Smith pointed out that classical and neoclassical economic theory had

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76/ Joan Robinson, The Economics of Imperfect Competition, (London: McMillan and Company, 1954), pp. 180-183.

77/ Joseph C. Seibert, Concepts of Marketing Management, (New York: Harper and Row, 1973), pp. 10-17.

78/ James F. Engel, et. al., Market Segmentation, Concepts and Applications, (New York: Holt, Rinehart and Winston, Inc., 1972), p. 1 and Henry J. Claycamp, et. al., "A Theory of Market Segmentation," Journal of Market Research, Vol. 5 (November, 1968), p. 388.

provided a useful framework for economic analysis but had become inadequate as an explanation of the contemporary business scene. Smith emphasized that heterogeneity rather than homogeneity had come to be the rule instead of the exception in contemporary marketing activities. 79/ Smith accepted the fact that both product differentation and market segmentation were consistent with the framework of imperfect competition, but he believed two managerial strategies should be distinguished as different systems of action. 80/ Smith said that product differentation was concerned with attempting to shift or to change the slope of the demand curve for the market offering of an individual supplier whereas segmentation was concerned with bringing about the recognition that several demand schedules may exist in a market; i.e., market segmentation strategy consists of viewing a heterogeneous market as a number of smaller homogeneous markets in response to differing product preferences among important market segments. 81/

From Smith's philosophical views on the concept of market segmentation its popularity began to grow and as Schwartz observed subsequently:

> ". . . it is nothing less than a revolutionary transformation which has come over the mass consumer during the past five years. From a single homogeneous unit, the mass market has exploded into a series of segmented, fragmented markets, each with its own needs, tastes, and way of life. 82/

79/ Wendell R. Smith, "Product Differentation and Market Segmentation as Alternative Marketing Strategies," Analytical Viewpoints in Market Management, (New Jersey: Prentice-Hall, Inc., 1968), p. 41.

80/ Ibid., p. 43.

81/ Ibid., pp. 43-44.

82/ Kenneth Schwartz, "Fragmentation of the Mass Market," Dun's Review and Modern Industry, (July, 1962), p. 14.

Claycamp and Massy indicated that segmentation gained support from marketers because of its profit implications and because the economic theory model showed how the concept was related to profit maximization. 83/

J. A. Lunn implied that the popularity of market segmentation was a result of researchers wanting to identify precisely the best target consumer subgroups. 84/

Tony Lunn states that segmentation emerged as a central concept in consumer research due to changes in the marketing environment. The most significant change was a growing recognition that consumers may differ in ways that are exploitable, and that to concentrate on universal products for the average consumer risks missing important marketing opportunities. 85/

Throughout writings of marketing thought the concept of market segmentation strategy is identified as a managerial philosophy and technique whereby products are directed at precise target groups of consumers rather than the mass population. From the description of market segmentation it follows that the concept's utility lies in identifying characteristics that have a major influence on purchase behavior and permits the marketer to select the most influential population segments which could improve the effectiveness of marketing programs.

In marketing literature there has been basically two approaches to the problem of identifying market segments. One has been to categorize consumers by a general consumer characteristic classification which

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83/ Claycamp, et. al., p. 389.

84/ J. A. Lunn, "Market Segmentation," Analytical Viewpoints in Market Management, (New Jersey: Prentice-Hall, Inc., 1968), pp. 47-48.

85/ Tony Lunn, "Segmenting and Constructing Markets," Consumer Market Research Handbook, (London: McGraw-Hill Book Company (UK) Limited, 1972), pp. 346-348.

encompasses geographic, demographic, and socio-economic consumption determinants. The second approach bases segmentation on behavioral response events such as usage, loyalty patterns, buying situations and attitudes toward a given marketing stimulus. 86/

Gist states that segmentation may be accomplished on most any social, economic, demographic or psychological basis. 87/ However, a large portion of marketing writers indicate that in segmenting general consumer characteristics the most useful basis for segmenting are geographic, income, education, occupation, social class, race, culture, age, life cycle, sex and ethnicity. Within the behavioral response classification there appears to be no general consensus as to the most useful basis for segmenting, but there is a tendency for several marketing writers to place major emphasis on segmenting by attitudes.

The consumer segmentation approach utilizing geographic, demographic, and socio-economic bases to identify consumer groups has been used traditionally and offers the obvious advantage that segments can be easily identified. 88/ Matthews, et. al., added a new dimension to the advantage of the general consumer characteristic approach by indicating that the raw information was so abundant that costs in data collection were reduced. 89/ However, in recent marketing thought the general

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86/ James F. Engel, et. al., Market Segmentation, Concepts and Applications, (New York: Holt, Rinehart and Winston, Inc., 1972), pp. 10-14, and Ronald E. Frank, et. al., Market Segmentation, (New Jersey: Prentice-Hall, Inc., 1972) pp. 26-27.

87/ Ronald R. Gist, Marketing and Society, (New York: Holt, Rinehart and Winston, Inc., 1971), p. 229.

88/ Martin L. Bell, Marketing Concepts and Strategy, 2nd. ed., (Boston: Houghton Mifflin Company, 1972), pp. 187-188 and Frank, pp. 29-30.

89/ John B. Matthews, Jr., et. al., Marketing, An Introductory Analysis, (New York: McGraw Hill Book Company, 1964), p. 101.

consumer characteristic approach to segmenting markets has been challenged as to its usefulness compared to behavioral segmenting. Although the conflict involving general consumer characteristics versus behavioral responses has not been resolved, there is considerable agreement among marketing writers that the two approaches together may add refinement to the segmentation concept.

Boyd and Massy states that the general consumer characteristic approach to segmentation was useful but "it should be recognized that they may not reveal the identity of groups that possess different behavioral patterns with respect to a particular product." 90/ Boyd and Massy also indicated that to identify groups with different behavioral patterns it is necessary to measure a person's predisposition to behave. Although predispositions can be measured in several ways, Boyd and Massy states that "attitudes seem to provide the best way of measuring predispositions to respond in a predetermined way to a given stimulus" and offers a base to segment consumers on the basis of what product characteristics they believe to be significant. 91/ The attitudinal segmentation begins with observed variations in behavior or stated attitude and works backward to variations in general consumer characteristics within segments.

Frank states that each approach may offer certain advantages and disadvantages, therefore, it is impossible to generalize regarding an ideal approach. He further states that each problem situation should be approached in the light of its own set of circumstances but usually it is necessary to utilize a wide range of measures of both general

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90/ Harper W. Boyd, Jr. and William F. Massy, Marketing Management, (New York: Harcourt, Brace, Jovanovich, Inc., 1972), p. 109.

91/ Boyd and Massy, p. 134.

consumer characteristics (age, income, education, social class, etc.) and behavioral responses (attitudes, perceptions, product usage, etc.). 92/

Yankelovich points out that a key requirement for market segmentation is that management should never assume in advance that any one method of segmentation is best. Rather, the first job should be to look at all feasible ways of segmenting and then choose the most meaningful ones to work with. 93/

92/ Frank, et. al., p. 67.

93/ Daniel Yankelovich, "New Criteria for Market Segmentation," Readings in Market Management, (New Jersey: Prentice Hall, Inc., 1972), p. 92.

CHAPTER IV
RESEARCH METHODOLOGY

The purpose of Chapter IV is to present the hypothesis and the basic research methodology used in the study. This chapter contains a discussion of the hypotheses, sample selection, data collection, research design, statistical tests, and the limitations of the study.

Research Hypothesis

Based on the concept of market segmentation, and the segmentation research studies reviewed in evaluating the processed farm-cultured catfish business in 1968, two general hypotheses were formulated with respect to sales of and satisfaction with processed farm-cultured catfish. The first general hypothesis was that consumers and potential consumers could be segmented and identified on the basis of selected economic, and socio-economic household and/or family characteristics. The second general hypothesis was that consumer satisfaction with processed farm-cultured catfish (as indicated by attitude) could be distinguished and categorized on the basis of selected economic and socio-economic household and/or family characteristics.

To test the general hypotheses, working hypotheses were formulated and stated in terms of number of sales of and satisfaction with processed farm-cultured catfish relative to segments of the selected determinants of consumer behavior.

Hypotheses for Determining the Relationships Between Selected Economic and Socio-Economic Determinants of Consumer Behavior and Number of Processed Farm-Cultured Catfish Sales in Little Rock and North Little Rock.

1. There is a negative relationship between income status of the household and the number of processed farm-cultured catfish sales. As income status increases or decreases, sales will vary in the opposite direction.
2. Households prefer to purchase fresh rather than frozen processed farm-cultured catfish.
3. Households prefer to purchase a pan ready form of processed farm-cultured catfish rather than a non-pan ready form.
4. There is a negative relationship between occupation of the head of household and processed farm-cultured catfish sales. As the social status of the occupation of the household head increases or decreases, the number of sales will vary in the opposite direction.
5. There is a positive relationship between age composition of the family and the number of processed farm-cultured catfish sales. As the mean age of the family increases or decreases, sales will vary in the same direction.
6. There is a positive relationship between the amount of formal education of the homemaker and the number of farm-cultured catfish sales. As formal education of the homemaker increases or decreases, the number of sales will also increase or decrease respectively.
7. Processed farm-cultured catfish sales are higher among Negro than White households.

Hypothesis for Determining Relationship Between Selected Economic and Socio-Economic Determinants of Consumer Behavior and Satisfaction with Processed Farm-Cultured Catfish as expressed by attitude in Little Rock and North Little Rock.

1. There is a negative relationship between homemaker's satisfaction with processed farm-cultured catfish and income status of the household. As income status increases or decreases, satisfaction will vary in the opposite direction.
2. Homemaker's satisfaction will vary with product form.
   (a) Homemakers will express greater satisfaction with a fresh product form than with a frozen form.
   (b) Homemaker's satisfaction with processed farm-cultured catfish will increase as the product is transformed from a non-pan ready form to a pan-ready form.
3. There is a negative relationship between the homemaker's satisfaction with processed farm-cultured catfish and occupation of the household head. As the social status of the occupation of the household head increases or decreases, satisfaction will vary in the opposite direction.
4. There is a negative relationship between age composition of the consuming families and homemakers' satisfaction with processed farm-cultured catfish. As the mean age of families increases or decreases, satisfaction will be intensified in the opposite direction.
5. There is a positive relationship between formal education of the homemaker and satisfaction with processed farm-cultured catfish. As the formal education of the homemaker increases or decreases, satisfaction will vary in the same direction.
6. Satisfaction with processed farm-cultured catfish is greater among Negro than White homemakers.

Sample Selection

The metropolitan areas of Little Rock and North Little Rock, Arkansas, were selected as the sample population. The selection was based on sales data of Arkansas major cultured catfish processors which indicated that Little Rock and North Little Rock provided a high degree of consumer awareness of processed farm-cultured catfish. Also, it was believed that the areas were of sufficient size and diversity to be fairly representative of the major processed cultured catfish consumption areas in the U.S.

Data Collection

The Kroger Company agreed to cooperate in the study and make available a random sample of supermarkets in which initial data could be collected. From Kroger's fourteen supermarkets in Little Rock and North Little Rock a random sample of six supermarkets were selected.

It was predetermined that the study would encompass all five processed farm-cultured catfish forms that were being marketed by the processors. These were: (1) whole fish, (2) whole frozen, (3) fresh steaks, (4) frozen steaks, (5) frozen breaded fillets.

The study was conducted during the second and third week in February of 1973. Two weeks prior to the study, the test products were offered for sale in the six supermarkets on a continuous basis to insure that store customers would be aware of the different forms of processed farm-cultured catfish available for purchase.

During the two-week study period the processed farm-cultured catfish products were offered for sale on Thursday, Friday, and Saturday with a continuous sales audit by a qualified interviewer from 9:30 a.m.

until 12:30 p.m. and 1:00 p.m. until 5:30 p.m. each day. During each audit period, data was collected from each cultured catfish purchasing store customer on the form purchased. Also during the audit periods, the interviewers secured names, addresses, telephone numbers, and permissions to interview at length the 246 purchasers of processed farm-cultured catfish and 246 non-cultured catfish purchasers by telephone the following week.

The 246 non-cultured catfish purchasing households were interviewed to acquire opinions about and attitudes toward the test product so a comparison of product satisfaction could be made between purchasers and non-purchasers. It was predetermined that the non-cultured catfish purchasers sampled would be the store customer passing the catfish display immediately following the in-store interview with each processed farm-cultured catfish purchaser.

When households did not have telephone service, the interviewer made arrangements to visit the home to obtain survey data. All interviews with purchasing households were completed while only 235 of the non-purchaser interviews were completed sufficiently to be usable. In addition to the date collected by the interviewers during this study period, Kroger Company management provided data on the total number of purchases of each form of test product, volume sold, and the number of customers patronizing each supermarket during the audit periods.

Kroger's management fixed a constant selling price on the test products in all six cooperating supermarkets for the study period. The selling price of whole fresh, whole frozen, fresh steaks, and frozen steaks was $1.29 per pound while a comparable selling price of $1.79 per pound was set on frozen breaded finger fillets.

Research Design

Two experimental techniques for measuring variations in consumer behavior were used in the study (match-lot and personal interview). To determine if homemakers would discriminate between different forms of processed farm-cultured catfish and to gain knowledge about consumer preference under actual purchasing conditions, a matched-lot experimental design was used to display the catfish for sale in the North Little Rock and Little Rock supermarkets. The matched-lot design consisted of offering simultaneously five separate lots of processed farm-cultured catfish varying only in product form.

The fresh and frozen processed farm-cultured catfish products were offered for sale in adjacent displays in the self-service meat counter consistent with the usual method of display (on a plastic tray covered with cellophane). The position of the fresh and frozen products were rotated within their respective display areas each day to eliminate any possibility of influence on sales due to one product form having a more convenient location. This technique of measurement was developed in 1948 at Cornell University as a modification of the latin square design to study consumer purchasing behavior of several lots of an apple variety bruised by different degrees. The technique was refined by Dr. Max Brunk and since has been used by agricultural marketing researchers to study purchase behavior when parameters of a population are not known and/or time is a limiting factor. 94/

94/ Max E. Brunk, Methods of Research in Marketing Paper Number 1, Evaluation of Research Techniques Used for Measuring the Influences of Factors Believed to be Associated With Volume of Consumer Purchases in Retail Stores, Cornell University Agricultural Experiment Station, (Ithaca, 1951), pp. 25-31.

To acquire economic and social characteristics of the purchasing household and to examine consumer satisfaction with and attitude toward the test product, the second experimental technique of personal interview was used. In formulating the interview schedules an effort was made to determine how homemakers would react to each question through trial testing. Where doubt of clarity existed in the opinion of a majority of homemakers trial tested, the schedule question was reworded and retested.

Payne warns that an interviewer should not take too much for granted about the homemakers' understanding of survey questions and states that:

> The most critical need for attention to wording is to make sure that the particular issue which the questioner has in mind is the particular issue on which the respondent gives his answers . . . To assure that the intended issue is understood, that is a fundamental function of question wording. 95/

Copies of the survey schedule are included in Appendix B.

In addition to the personal interview survey providing economic and social information on each household, the interviews also provided a means to measure the homemakers satisfaction and the intensity of their likes and dislikes. Through the use of a graphic rating scale, qualitative data was quantified on attitude toward the major attributes, (determined by independent processor in-store sampling) appearance, flavor, aroma, and texture resulting in an overall satisfaction rating of processed farm-cultured catfish. The graphic rating scale measures rank order of a set of qualitative stimuli with respect to a particular response population. 96/ Luck points out that a question calling for

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95/ Stanley L. Payne, The Art of Asking Questions, (Princeton University Press, 1951), pp. 9-10.

96/ Paul E. Green and Donald S. Tull, Research for Marketing Decisions, (New Jersey: Prentice-Hall, Inc., 1966), p. 199.

a scaled answer is endeavoring to provide a direct measure of a respondent's opinion and provides a basis upon which to make comparative judgements about behavior, things, ideas, and the environment. 97/ Remmer further states that one or several subjects may be scale rated but the larger the group, the better the results. 98/

The rating scale was not expected to form an absolute true scale of preference in terms of like or dislike; however, the results were suitable for grouping the sample subjects into categories based on different degrees of preference. The rating scale ranged from 1 for "very poor" to 5 for "very good". The midpoint in the scale, "neither liked nor disliked", was equivalent to 3 numerically.

Statistical Tests

Nonparametric statistical tests were selected for this study since the models do not specify conditions about the parameters of the population from which the sample subjects were drawn. However, as Siegel states,

> "certain assumptions are associated with most nonparametric statistical tests, i.e., that the observations are independent and that the variables under study have underlying continuity, but these assumptions are fewer and much weaker than those associated with parametric tests. Moreover, nonparametric tests do not require measurement so strong as that required for parametric tests; most nonparametric tests apply to data in an ordinal scale, and some apply also to data in a nominal scale." 99/

97/ Adele K. Luck, et. al., Market Research, 3rd. ed., (New Jersey: Prentice-Hall, Inc., 1970), pp. 191-192.

98/ H. H. Remmer, Introduction to Opinion and Attitude Measurement, (New York: Harper and Brothers Publishers, 1954), pp. 225-226.

99/ Sidney Siegel, Nonparametric Statistics, (New York: McGraw-Hill Book Company, Inc., 1956), p. 31.

Chi-Square x^2 for One-Sample Tests

Frequently researchers are interested in the number of subjects or responses which fall into various categories or classes. The chi-square test is suitable for analyzing data like these. The categories or classes may be two or more and the test is of the goodness-of-fit type in that it may be used to test whether a significant difference exists between an observed number of subjects or responses falling in each category or class and the expected number based on a null hypothesis. In this study, the chi-square one-sample test was used to determine whether a difference existed between the number of subjects or responses between segments of the sampled population (for an example see Table 3 and Appendix Table 1).

This technique directs one to sum over k categories or classes the squared differences between each observed and expected frequency divided by the corresponding expected frequency.

$$x^2 = \sum_{i=1}^{k} \frac{(O_i - E_i)^2}{E_i} \qquad (3 - 1)$$

where O_i = observed number of cases categorized in the i^{th} category,

E_i = expected number of cases in i^{th} category under a hypothesis,

and

$\sum_{i-1}^{k}$ directs one to sum over all (k) categories or classes.

The sampling distribution of chi-square as computed from formula (3 - 1), follows the chi-square distribution with df = k-1. The calculated value of chi-square, when equal to or greater than the critical value of chi-square, indicates that the observed subjects or responses differ from expectations; that is, they are from different populations. 100/

100/ Leonard J. Kazmier, Statistical Analysis for Business and Economics, (New York: McGraw-Hill Book Company, Inc., 1967), pp. 206-221.

Chi-Square x^2 for k Independent Samples

When frequencies in discrete classes (either nominal or ordinal) constitute the research data, the chi-square test may be used to determine the significance of the difference among k independent groups.

The hypothesis under test is usually that the k groups differ with respect to some characteristic and therefore with respect to the relative frequency with which group members fall in several categories. To test the hypothesis, the number of cases from each group that fall in the various categories are compared proportionally to the cases that fall into categories of other groups.

$$X^2 = \sum_{i=1}^{r} \sum_{j=1}^{k} \frac{(O_{ij} - E_{ij})^2}{E_{ij}} \qquad (3 - 2)$$

where O_{ij} = observed number of cases categorized in i^{th} row of j^{th} column,

E_{ij} = number of cases expected under a hypothesis to be categorized in i^{th} row of j^{th} column, and

$\sum_{i=1}^{r} \sum_{j=1}^{k}$ directs one to sum over all (r) rows and (k) columns.

The sampling distribution as computed from formula (3 - 2), follows the chi-square distribution with df = (r-1)(k-1). The computed value of chi-square, when equal to or greater than the critical value of chi-square, indicates that the number of subjects or responses within categories are significantly different relative to the characteristic being measured.

To find the expected frequency for each category, the marginal totals common to a particular category are multiplied, and then the

product is divided by the total number of cases. 101/ (For an example see Table 5).

The chi-square test for k independent samples requires that the expected frequencies not be too small. With degrees of freedom larger than 1 (when k or r is larger than 2), fewer than 20 percent of the cells should have an expected frequency of less than 5, and no cell should have an expected frequency of less than 1. If these requirements are not met by the data in original form, the researcher must combine adjacent categories to meet test requirements. The categories combined must have some common property or mutual identity for test results to be properly interpreted. 102/ In this research chi-square for k independent samples was primarily utilized to determine whether a difference existed in satisfaction ratings among the selected economic and social segments.

It was predetermined that the 5 percent level of probability was sufficiently accurate for this study. Blankenship states: "A measure that will be right in 95 out of 100 cases is reasonably accurate for the usual survey." 103/

Limitations

As is the case with most primary research studies, in order to make the task manageable in terms of quantity of data, research costs, and the necessary time dimensions, it was essential to work within certain limitations as to scope and depth.

101/ Siegel, pp. 175-179.

102/ Ibid., p. 179.

103/ Albert B. Blankenship, Consumer and Opinion Research, (Harper and Brothers Publishers, 1943), p. 15.

1. This study embraces only a select market--six Kroger Company supermarkets in North Little Rock and Little Rock, Arkansas.
2. Sales and satisfaction are considered only as they relate to one point on a product demand schedule.
3. It was assumed that there were no available outlets for processed farm-cultured catfish products other than retail food markets.
4. The implications of a short market test period may be suggestive rather than definite.
5. Religious preferences were not analyzed since civil rights legislation protects its disclosure.
6. The selected economic and social variables examined in this study are assumed to be the major factors influencing consumer purchases of, and satisfaction with processed farm-cultured catfish.
7. The markets of any product are affected by a great number of variables. Some of those variables vary among states and geographical regions while some vary within states and geographical regions; therefore, the findings of this study should be restricted to states or geographical regions with a high degree of awareness of processed farm-cultured catfish and similar population characteristics.

CHAPTER V
ANALYSIS AND INTERPRETATION OF ECONOMIC AND SOCIAL FACTORS RELATIVE TO SALES DATA

Relying on the concept of market segmentation discussed in Chapter III, the research studies utilized to evaluate the processed farm-cultured catfish business in terms of the (MPM) in Chapter I and working within the imposed limitations discussed in Chapter IV, the following economic and social determinants of buyer behavior were believed to be major influences on processed farm-cultured catfish retail food market sales and the degree of consumer satisfaction for the product at any given time. These are: income status of the household, product form, occupation of head of household, age composition of the family, formal education of the homemaker, and race.

In the remainder of this chapter the findings of this study are presented as relationships between the economic and social variables and processed farm-cultured catfish sales. The results of the applied statistical tests are also presented in conjunction with the analysis of each variable when appropriate.

The Influence of Economic Factors on Sales

To eliminate the effects of the variability in customer traffic flow among the six cooperating supermarkets and to facilitate the analysis operationally, all sales data were combined. Hereafter, all sales will be reported on the basis of sales per thousand supermarket patrons or by raw data classifications.

Income Status and Sales

Considerable variability occurred among the stores in the number of sales of processed farm-cultured catfish. The number of sales ranged

from a low of 3.4 to a high of 18.5 per thousand supermarket patrons. When the supermarkets were grouped together, the number of sales per thousand supermarket patrons averaged 7.8 (Table 1). These sales represent approximately 18 pounds of processed farm-cultured catfish purchased per thousand store patrons compared to purchases of approximately 2076 pounds of all meats per thousand store patrons during the same period (Table 2).

Since the 1970 Census of Population classified Little Rock and North Little Rock households as consisting of 33.2 percent having incomes of less than $5,000, 34.2 percent having incomes of $5,000 to $9,999, and 32.6 percent having incomes of $10,000 and above, expectations were that sales of processed farm-cultured catfish would approximate these percentages for each income status segment (see Appendix Table 1). However, the clientele of the supermarkets in the high income status segment purchased processed farm-cultured catfish at a much greater rate than did patrons in the medium or low income status segments (Table 3). The computed chi-square associated with the number of sales of processed farm-cultured catfish and income status was significant since the critical value associated with the 5 percent significance level was 5.99 with two degrees of freedom. Chi-square was also applied to all combinations of income status and all combinations exhibited a significant difference at the 5 percent level of probability. These relationships and the direction of the sample data suggests that the working hypothesis that a negative relationship exists between income status and the number of processed farm-cultured catfish sales be rejected, i.e., as income status increased there was a tendency for

Table 1. Number of Processed Farm-Cultured Catfish Sales Per Thousand Store Patrons for Six Cooperating Retail Supermarkets in Little Rock and North Little Rock, Arkansas

Supermarket	Number of sales	Number of patrons a/	Sales per thousand store patrons
1	18	4,291	4.2
2	97	5,226	18.5
3	47	5,580	8.4
4	21	5,562	3.8
5	19	5,586	3.4
6	44	5,302	8.3
Total	246	31,547	7.8

a/ Includes only store patrons during the audit periods. The number of store patrons was supplied by supermarket executives and was based on daily traffic count prorated per business hour.

Table 2. Total Poundage of All Meats and Processed Farm-Cultured Catfish Sold, Store Patron Traffic Count, and Pounds of Meat Sold Per Thousand Store Patrons for Six Cooperating Supermarkets From February 12, 1973 through February 24, 1973, Little Rock and North Little Rock a/

Product	Total pounds sold	Number of store patrons	Pounds sold per thousand store patrons
Processed Farm-cultured catfish	1,572.15	87,630	17.94
All meats b/	181,885	87,630	2075.60

a/ All product and patron information was supplied by executives of the cooperating supermarkets.

b/ All meats include fresh and frozen meat products and include farm-cultured catfish.

Table 3. Number of Processed Farm-Cultured Catfish Sales, Expected Sales, and the Chi-Square Values Related to Income Status, Little and North Little Rock

	Income status a/				
	Low	Medium	High	Unclassified b/	Total
Number of sales	43	67	120	16	246
Expected sales c/	(76)	(79)	(75)	--	230

Income class	Chi-Square Expected frequency c/	df	Value
Low-Medium-High	.332, .342, .326	2	43.15*
Low-Medium	.332 and .342	1	16.15*
Low-High	.332 and .326	1	41.33*
Medium-High	.342 and .326	1	28.82*

a/ Income status segments, low -- less than $5,000; medium -- $5,000 to $9,999; and high -- $10,000 and above, were selected since the number of households in each segment were more equal and facilitative than other potential classifications.

b/ Households that did not report household income status.

c/ Based on percentage that each income status segment occurred in the Little Rock and North Little Rock population (see Appendix Table 2).

* Significant at the 5 percent level.

households to increase their purchases of processed farm-cultured catfish.

Product Form and Sales

Prior to this study, farm-cultured catfish processors had not concentrated upon supplying any retail food market with a combination of available processed farm-cultured catfish products. Too, independent and chain retail food markets in Little Rock and North Little Rock had not actively engaged in any marketing program to provide a variety of processed farm-cultured catfish products. In fact, the only processed farm-cultured catfish product that had been marketed through retail food markets in Little Rock and North Little Rock within the preceding twelve months had been fresh whole.

Since information was not available as to consumers' satisfaction with, reaction to, and knowledge of sales of various processed farm-cultured catfish products, the retail food market displays of processed farm-cultured catfish products provided consumers an opportunity to express their preference. Consumers purchased the fresh processed farm-cultured catfish forms far more extensively than the frozen product forms. Approximately 83% of the consumers purchased a fresh processed farm-cultured catfish product while approximately 17% purchased a frozen product form (Table 4).

Assuming an equal likely chance of selection among product forms, the incidence of sales differed significantly between the fresh and frozen farm-cultured catfish at the 5 percent level of probability. The data direction and the chi-square test suggests that the working hypothesis that households prefer to purchase fresh rather than frozen processed farm-cultured catfish, should be accepted.

Table 4. Total Number of Sales of Processed Farm-Cultured Catfish, Percentage Distribution, and Related Chi-Square Values by Product Form, Little Rock and North Little Rock

Product form	Total number of sales	Percent of total sales
Fresh		
Whole	112	45.5
Steaks	93	37.8
Total fresh	205	83.3
Frozen		
Whole	20	8.2
Steaks	16	6.5
Breaded finger fillets	5	2.0
Total frozen	41	16.7
Total Product	246	100.0

Chi-Square

Product form combination	Expected frequency a/	df	Value
Fresh-Frozen	.5	1	109.34*
Fresh Whole-Fresh Steak-Frozen Whole Frozen Steaks-Frozen Breaded Finger Fillets	.2	4	198.60*
Fresh Whole-Fresh Steaks	.2	1	119.14*
Fresh Whole-Frozen Whole	.2	1	97.50*
Fresh Whole-Frozen Steaks	.2	1	102.56*
Fresh Whole-Frozen Breaded Finger Fillets	.2	1	119.88*
Fresh Steak-Frozen Whole	.2	1	56.32*
Fresh Steak-Frozen Steaks	.2	1	61.38*
Fresh Steaks-Frozen Breaded Finger Fillets	.2	1	78.70*
Frozen Whole-Frozen Steaks	.2	1	39.74*
Frozen Whole-Frozen Breaded Finger Fillets	.2	1	57.06*
Frozen Steaks-Frozen Breaded Finger Fillets	.2	1	62.12*

a/ Expected frequency assumes that each product form has an equal likely chance of being purchased.

* Significant at the 5 percent level.

The reasons given by the homemakers for their preference of fresh processed farm-cultured catfish indicates that 108 homemakers selected a fresh product because of better taste, flavor or appearance; 64 selected a fresh product because of personal preference for fresh foods; 30 selected a fresh product because they just disliked frozen fish or they disliked frozen fish because freezing made the product too dry or tough, made the product's flavor or aroma too strong, destroyed the taste or flavor of the product, or the homemaker was afraid the product had been thawed and refrozen. Three homemakers gave no reason for their selection (Table 5).

The reasons given by the homemaker for purchasing frozen processed farm-cultured catfish indicate that 15 homemakers selected a frozen product for the home freezer to provide convenience, 8 purchased the frozen product out of curiosity to test what the product would be like, 2 purchased the frozen product and stated that fresh or frozen made no difference to them, 4 purchased the frozen product because they preferred it and 12 selected the frozen product only because the fresh processed farm-cultured catfish had been sold.

There was also a considerable difference among the incidence of purchases for all the test product forms. Although a price differential existed for frozen breaded finger fillets, expectations were that pan ready breaded finger fillets or pan ready steaks would dominate sales. However, the data indicates that steaks accounted for 44.3 percent of sales while the breaded finger fillets accounted for only 2.0 percent of the sales. Under the assumption that each product form had an equal likely chance of being purchased, a chi-square value of 198.60 was computed which was significant at the 5 percent level (See Table 4).

Table 5. Reasons Homemakers Selected Fresh or Frozen Processed Farm-Cultured Catfish by Number of Homemakers Responding, Little Rock and North Little Rock

Reason stated	Number of homemakers
Fresh Product	
Better taste, flavor, or appearance	108
Prefer fresh food	64
Just dislike frozen fish	13
Dislike frozen fish because:	
Too dry or tough	5
Flavor or aroma too strong	3
Destroys taste or flavor	7
Afraid product had been thawed and refrozen	2
Gave no reason for selection	3
Total Fresh	205
Frozen Product	
For home freezer to provide convenience	15
Had to test the frozen product	8
Indifferent to fresh or frozen	2
Prefer frozen	4
Fresh had all sold	12
Total Frozen	41
Total Product	246

Chi-square was then applied to all possible combinations of product forms and all were significant at the 5 percent level. The data direction and test results suggests that the working hypothesis that households prefer to purchase a pan-ready form of processed farm-cultured catfish rather than a non-pan-ready form be accepted.

From the direction of the data it is believed that although the consuming households do not prefer to purchase a pan-ready processed farm-cultured catfish at the same or comparable prices, habits of preparation or household members' preferred style of preparation may influence the homemaker's selection of whole processed farm-cultured catfish over a pan-ready product.

When the homemakers were asked how processed farm-cultured catfish was usually served in the household, 54.5 percent indicated steak form, 28.0 percent indicated whole fish, 16.3 percent indicated fillets, and 1.2 percent gave no response. Compared to the sample of sales, 53.7 percent of the households purchased fresh or frozen whole processed farm-cultured catfish while 44.3 percent purchased steaks and 2.0 percent purchased breaded finger fillets (Table 6). Also, of the 132 households purchasing whole processed farm-cultured catfish only 9 of the homemakers indicated they would prefer a more convenient product while 5 of the homemakers of the 5 breaded finger fillet purchasing households indicated a preference for a more convenient product (Table 7). Of these 15 homemakers indicating a preference for a more convenient product, 4 of the whole and 2 of the steak purchasers suggested making a TV dinner from the product, 4 of the whole and 3 of the steak purchasers suggested pre-breading the product, one of the

Table 6. Forms of Processed Farm-Cultured Catfish Purchased and Consumed by Number and Percentage Distribution of Households, Little Rock and North Little Rock

Form	Households			
	Purchased		Consumed	
	Number	Percent	Number	Percent
Whole fresh or frozen	132	53.7	69	28.0
Steaks fresh or frozen	109	44.3	134	54.4
Fillets	5	2.0 a/	40	16.3 b/
Unclassified c/	--	--	3	1.2
Total	246	100.0	246	100.0

a/ Includes only the test product -- breaded finger fillets.

b/ Includes breaded finger fillets and fillets prepared by the homemaker.

c/ No response was given as to how the product was usually served by the homemaker.

Table 7. The Number of Homemakers and Suggestions of Homemakers Responding to Preference for a More Convenient Processed Farm-Cultured Catfish Product by Product Purchased, Little Rock and North Little Rock

Product purchased	Homemakers preference for a more convenient product			
	Yes	No	No response	Total
Whole fresh and frozen	9	119	4	132
Steaks -- fresh and frozen	5	103	1	109
Breaded finger fillets	1	4	--	5
Total	15	226	5	246

Suggestions for a more convenient product	Product purchased		
	Whole fresh and frozen	Steaks -- fresh and frozen	Breaded finger fillets
Make into TV dinner	4	--	--
Pre-bread	4	--	--
No suggestion	1	--	--
Make into TV dinner		2	--
Pre-bread		3	--
Pre-cook			1
Total	9	5	1

whole purchasers gave no suggestion, and the one purchaser of breaded finger fillets suggested pre-cooking the product.

These data indicate that in several households the whole processed farm-cultured catfish purchased was not the form of the product consumed and that generally the homemakers were satisfied with the product purchased. The implications suggest that several homemakers may prefer to purchase a whole processed farm-cultured catfish because this form lends itself to a particular style of preparation preferred by the homemaker or members of the household which is somewhat different from what could be purchased through a retail food market.

Summary

Results of the analysis suggests that income status of the household and product form influenced purchases of processed farm-cultured catfish.

Sales among households within the income segments were significantly different. There was a tendency for households to increase their purchases as the income status of households increased.

Differences in consumer preference for the various forms of farm-cultured catfish was significant at the 5 percent level. Fresh processed cultured catfish was preferred by the consumers by a ratio of approximately 5 to 1. On a percentage basis, approximately 83 percent of the consumers purchased a fresh product while only approximately 17 percent purchased a frozen product.

The most frequent reasons given by the homemaker for their preference of fresh processed farm-cultured catfish were:

1. Better taste, flavor or appearance
2. Prefer fresh foods

The most frequent reasons given by the homemakers for their preference of frozen processed farm-cultured catfish were:

1. For home freezer to provide convenience
2. Fresh had all sold

There was a significant difference among sales of the various forms of processed farm-cultured catfish. Also, it was expected that the pan-ready breaded fillets or the pan-ready steaks would dominate sales. However, the pan-ready breaded fillets only accounted for 2.0 percent of the total sales and pan-ready steaks accounted for 44.3 percent of total sales while whole processed farm-cultured catfish dominated with 53.7 percent of sales.

In the Little Rock-North Little Rock sample area, households within each income status segment preferred to purchase fresh processed farm-cultured catfish to frozen while fresh whole was definitely preferred over fresh steaks. However, when the homemakers were asked how processed farm-cultured catfish was usually served in the household, the responses indicated that many times the form of product purchased (particularly whole fresh and frozen) was not necessarily the form of product consumed. Therefore, a preference to purchase a particular product, especially whole processed farm-cultured catfish, may indicate that out of habit or personal household member preference the homemaker applies a particular style of preparation different from what could be purchased in a retail food market.

The Influence of Social Factors on Sales

The theoretical position of the veblenian social-psychological model of buyer behavior is that individual wants and behavior is

significantly influenced by his present and aspired group memberships. 104/ As pointed out by Stanton, this is also a common position among modern sociology and marketing researchers. 105/ Therefore, a significant question for the researcher becomes: Can these social groups be identified so that a marketer or potential marketer can more accurately describe the potential market for his product?

Occupation of Head of Household and Sales

It was hypothesized that household consumption of processed farm-cultured catfish would be influenced negatively by the social status of the occupation of the household head. Using the United States Census of Population classifications, the following four large and fairly homogeneous segments were composed: Group A, the white-collar segment consisting of professional, technical, proprietors, managers, and administrators; Group B, the blue-collar segment consisting of sales workers, clerical and kindred workers, craftsmen, foremen, and kindred workers, operatives and kindred workers, and service specialists; Group C, the unskilled segment composed of domestic, health, and food service workers, and laborers (See Appendix Table 2); and Group D, composed of all retired heads of households.

There was a substantial difference in the purchases of processed farm-cultured catfish among the four occupational segments (Table 8). The difference in the number of sales of processed farm-cultured catfish associated with the various occupational segments was subjected to the chi-square tests and the difference was found to be significant at the

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104/ Philip Kotler, "Behavior Models for Analyzing Buyers," Introduction to Marketing, ed. Edward M. Mazze, (Scranton, Pennsylvania: Chandler Publishing Company, 1970) p. 37.

105/ William J. Stanton, Fundamentals of Marketing, 3rd. ed., (New York: McGraw-Hill Book Company, 1971) pp. 122-130.

Table 8. Processed Farm-Cultured Catfish Sales, Expected Sales and the Chi-Square Values Related to Occupation of Head of Household, Little Rock and North Little Rock

	Occupation of head of household				
	Group A a/	Group B b/	Group C c/	Group D d/	Unclassified e/
Number of sales	91	81	26	42	6
Expected sales f/	(49)	(120)	(31)	(40)	-

Occupational combination	Expected frequency f/	Chi-Square df	Chi-Square Value
Group A, B, C, D	.205, .499, .128, .168	3	49.59*
Group A, B	.205, .499	1	48.68*
Group A, C	.205, .128	1	36.81*
Group A, D	.205, .168	1	36.10*
Group B, C	.499, .128	1	13.49*
Group B, D	.499, .168	1	12.78*
Group C, D	.128, .168	1	.91

a/ Group A includes professional, technical, proprietors, managers, and administrators.

b/ Group B includes sales workers, clerical and kindred workers, craftsmen, foremen and kindred workers, operatives and kindred workers, and service specialists.

c/ Group C includes domestic, health and food service workers, and laborers.

d/ Group D includes retired head's of households.

e/ Includes households that did not report occupation of head of household.

f/ Based on percentage composition of segments in Little Rock and North Little Rock (see Appendix Table 4).

* Significant at the 5 percent level.

5 percent level of probability. Further chi-square tests were applied to all combinations of occupational segments with all except Group C, unskilled workers and Group D, retired heads of households, exhibiting a significant difference at the 5 percent level. As expected, the direction of sales was toward the socially higher occupational segments. The white and blue collar workers purchased a major portion of the processed farm-cultured catfish sold through retail food markets. The chi-square tests and the data direction suggest rejecting the working hypothesis that as the social status of the occupation of the household head increases, the number of processed farm-cultured catfish sales vary in the opposite direction.

The insignificant chi-square value associated with purchases of processed farm-cultured catfish by the unskilled workers and retired heads of households suggested that both segments belong to a common consumer population. However, to further study the insignificant chi-square value associated with purchases of processed farm-cultured catfish by the unskilled workers and the retired heads of households, the sample data was cross classified by occupation and income status. It then became evident that both variables were closely interrelated by a variety of common factors such as education, aggressiveness, opportunity, etc., which were beyond the parameters of the study. Approximately 97 percent of the processed farm-cultured catfish sales to households with an income status of $10,000 and above were white and blue-collar workers. Within the $5,000 to $9,999 income status class approximately 70 percent of sales were also to white and blue-collar workers while approximately 88 percent of the sales to households with an income status of less than $5,000 were to unskilled workers and to households with retired household heads (Table 9).

Table 9. Number and Percentage Distribution of Processed Farm-Cultured Catfish Sales by Income Status and Occupation of Head of Household, Little Rock and North Little Rock

Income status	Occupation of head of household										Total	
	Group A		Group B		Group C		Group D		Unclassified a/			
	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent	No.	Percent
Less than $5,000	--	--	5	11.6	15	34.9	23	53.5	--	--	43	100.0
$5,000 to $9,999	12	17.9	35	52.2	8	12.0	11	16.4	1	1.5	67	100.0
$10,000 and above	78	65.0	38	31.7	--	--	4	3.3	--	--	120	100.0
Unclassified a/	1	6.2	3	18.8	3	18.8	4	25.0	5	31.2	16	100.0
Total	91	37.0	81	32.9	26	10.6	42	17.1	6	2.4	246	100.0

a/ Households that did not report income status or occupation of head of household or both.

Although an interrelatedness between income status and occupational segments exists, there was insufficient evidence to conclude that unskilled workers and households with retired heads of households were members of the same social group. Rather, the logical implications were that the retired occupational segment probably did not belong to the same social group that unskilled workers were associated with but due to their fixed comparable money income they were constrained to purchase similar consumption items.

Age Composition of Families and Sales

The veblenian buyer behavioral model indicates that important social groups evolve from the family during the family life cycle. For example, social groups are represented by each of the following stages in the family life cycle. The young married with no children, the young married with children under six years of age and older, older married with children, older married with no children. 106/ Boyd and Massy points out that these social groupings are the results of both change in family status and the biological process of aging and emphasize that family expenditures vary considerably among families with and without children and that expenditures and product use also vary significantly among families with different aged children. 107/

In light of the previous stated propositions, it was anticipated that homemakers with school age children, especially homemakers with children under 12 years of age, would discriminate against processed farm-cultured catfish due to the abundance of small bones. From the

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106/ Kotler, pp. 32-33.

107/ Boyd and Massy, pp. 96-97.

sample of 246 farm-cultured catfish purchasing households 225 constituted family units, and of these families approximately 50 percent reported family members under 18 years of age while approximately 20 percent reported only family members under 12 years of age (Table 10).

From the direction of the sample data and by measuring the sample data against the 1970 Census of Population proportions reported for age composition groups in Little Rock and North Little Rock, the hypothesis that as the mean age of the family increases or decreases the number of sales will vary in the same direction was suggestive of confirmation. The chi-square value associated with families that were composed of chidren under 12 years of age and families with adult members only was significant at the five percent level; however, when children under 12 years of age were grouped with family members 12 years of age through 17 years of age and compared to adults only, 18 and above, there was an insignificant difference between the groups at the five percent level. The computed value for one degree of freedom was 3.05 compared to the critical value of 3.84.

Formal Education of the Homemaker and Sales

Although formal education is highly correlated with income and occupational status, education has a strong if not overriding effect on the purchase of certain products. Beckman states "that the more highly educated consumer-buyer is a more sophisticated shopper with different patterns of needs and wants growing in part out of higher levels of aspirations." 108/ Boyd and Massy also points out that

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108/ Theodore N. Beckman, et. al., Marketing, 8th ed., (New York: The Ronald Press Company, 1967), p. 127.

Table 10. Processed Farm-Cultured Catfish Sales and Percentage Distribution, Expected Sales and Percentage Distribution, and the Chi-Square Values Related to Age Composition of the Family, Little Rock and North Little Rock

	Age composition families with members		
	Under 12 only	Under 18	Adults only 18 and above
Number of sales	46	113	112
Percent of total families	20.4	50.2	49.8
Expected percent of total families a/	(49.3)	(55.8)	(44.2)
Number of expected sales	(111)	(126)	(99)

	Chi-Square		
Age composition	Expected frequency a/	df	Value
Under 12 and 18 and above	.493 & .442	1	39.77*
Under 18 and 18 and above	.558 & .442	1	3.05

a/ U. S. Department of Commerce, Bureau of the Census, U. S. Census of Population, 1970, Arkansas, PC(1)-D5, (Washington: U. S. Government Printing Office, 1972), Table 156, p. 515.

* Significant at the 5 percent level.

higher levels of formal education is a characteristic of early product adoption. 109/ Dickins stated that with income levels held constant homemakers with higher levels of education provided better diets than homemakers with fewer years of formal education. Dickins also acknowledged that formal education may have a greater influence on usages of food products than on nutritional value. 110/

Since the homemaker has the responsibility for preparing meals, it was anticipated that homemakers with more years of formal education would place a higher value on nutritionally balancing the diet of the household with a variety of meats and would purchase processed farm-cultured catfish at a proportionally greater ratio than homemakers with less formal education. Only 235 of the purchasing households reported formal education level of the homemakers. Approximately 9 percent reported homemakers with 8 years or less formal education while homemakers with 9 through 12, 13 through 16 and over 16 years of formal education was reported by approximately 48, 35, and 3 percent of the households, respectively (Table 11). Chi-square was applied to the sample data and the expected distribution of homemakers by years of formal education based on the 1970 U.S. Census estimate of the Little Rock and North Little Rock population and the difference between the formal education segments was significant at the 5 percent level. All possible pairs of the education segments were also subjected to the chi-square test and all were significant at the 5 percent level.

These statistical results of the sample data suggests confirming the hypothesis that as the formal education of the homemaker increases

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109/ Boyd and Massy, p. 107.

110/ Dorthy Dickins, "Factors Related to Food Preference," Mississippi Agricultural Experiment Station Paper (1962), p. 5.

Table 11. Processed Farm-Cultured Catfish Sales and Percentage Distribution, Expected Sales and Percentage Distribution, and the Chi-Square Values Related to Years of Formal Education of the Homemaker, Little Rock and North Little Rock

	Homemakers years of formal education					
	8 or less	9 through 12	13 through 16	More than 16	Unclassified a/	Total
Number of sales	23	118	86	8	11	246
Percent of households reporting	9.3	48.0	35.0	3.3	--	100.0
Expected percent of households reporting b/	(22.3)	(59.1)	(16.7)	(1.9)	--	100.0
Number of expected sales	(52)	(139)	(39)	(5)		235

Years of formal education	Chi-Square Expected frequency b/	df	Value
8 or less, 9 through 12, 13 through 16, more than 16	.223, .591, .167, .019	3	77.78*
8 or less and 9 through 12	.223 and .591	1	19.34*
8 or less and 13 through 16	.223 and .167	1	72.81*
8 or less and more than 16	.223 and .019	1	17.97*
9 through 12 and 13 through 16	.591 and .167	1	59.81*
9 through 12 and more than 16	.591 and .019	1	4.97*
13 through 16 and more than 16	.167 and .019	1	58.44*

a/ Households that did not report formal education of homemaker.

b/ U. S. Department of Commerce, Bureau of the Census, U. S. Census of Population, 1970, Arkansas, PC(1)-D5, (Washington: U. S. Government Printing Office, 1972), Table 202, p. 819.

or decreases the number of prccessed farm-cultured catfish sales will vary in the same direction. Also, from the direction of the data there were implications that a most effective marketing program should be directed specifically toward homemakers with one or more years of college since the ratio of sales to actual population was much higher for these homemakers than any educational segment.

Race of Purchaser and Sales

In most every society children tend to belong to the social groups of their parents. By virtue of this relationship the children usually reflect attitudes, aspirations and prejudices of the parental values which establish or join a definite socio-economic pattern or family or household living. Thus, the face-to-face group values within the Negro subculture were expected to have a major influence upon the households' purchasing habits of processed farm-cultured catfish.

All retail food market patrons that purchased processed farm-cultured catfish were classified as either White or Negro since Oriental and other races were relatively unimportant in the sample area covered by this study.

According to the 1970 Census of Population estimates were that 15.7 percent of the households in the Little Rock and North Little Rock metropolitan area were Negro and 84.3 percent of the households were White (Appendix Table 4). However, the sample data indicated that 22.4 percent of the processed farm-cultured catfish sales were to Negro households while White households accounted for only 77.6 percent of the sales. Actual sales were tested against the expected population ratios by applying chi-square and the difference between White and

Negro household sales was significant at the 5 percent level (Table 12). The significant chi-square value suggests confirming the hypothesis that processed farm-cultured catfish sales are higher among Negro than White households. However, since income was determined to be a significant factor influencing purchasing and since the average income of white households in the sample area were considerably higher than income of Negro households, it was deemed necessary to further investigate the race-purchase relationship.

The 1970 Census of Population indicated that in the sample area 76 and 24 percent of the population, respectively, were White and Negro households with incomes of less than $5,000. Within the $5,000 - $9,999 income segment 83 percent were White and 17 percent were Negro households. The $10,000 and above income segment was composed of 96 percent White and 4 percent Negro households.

When these population values were statistically compared to the actual sample values there was a significant difference in purchase rate between White and Negro income segments (Table 13). The chi-square value and the data direction reaffirms the imlications that processed farm-cultured catfish sales are higher among Negro than White households.

Summary

There were considerable variations within the segments of the selected social determinants of buyer behavior. Analysis of the sample data indicated a significant difference existed in number of sales to households with household heads segmented as white-collar, blue-collar, unskilled and retired. The white-collar and blue-collar workers accounted for a major portion of processed farm-cultured catfish sales

Table 12. Processed Farm-Cultured Catfish Sales and Percentage Distribution, Expected Sales and Percentage Distribution and the Related Chi-Square Value by Race of Household, Little Rock and North Little Rock

	Race of household		
	White	Negro	Total
Number of sales	191	55	246
Percent distribution of households	77.6	22.4	100.0
Expected percent distribution of households a/	(84.3)	(15.7)	(100.0)
Expected number of sales	(207)	(39)	(246)

	Chi-Square		
Race of household	Expected frequency a/	df	Value
White-Negro	.843 and .157	1	7.80*

a/ Percentage White and Negro population in Little Rock and North Little Rock, 1970 (see Appendix Table 4).

* Significant at the 5 percent level.

Table 13. Processed Farm-Cultured Catfish Sales and Expected Sales and the Related Chi-Square Value by Race of Household and Income Status Little Rock and North Little Rock

Income Status a/	Race of Household: White Sales	White Expected Sales b/	Negro Sales	Negro Expected Sales b/	Total
	Number	Number	Number	Number	Number
Low	21	(33)	22	(10)	43
Medium	45	(56)	22	(11)	67
High	110	(115)	10	(5)	120
Unclassified c/	15	---	1	---	16
Total	191		55		246

$x^2 = 37.13$*

a/ Income status segments, low-less than $5,000; medium, $5,000 to $9,999; and high, $10,000 and above.

b/ U.S. Department of Commerce, Bureau of the Census, U.S. Census of Population, 1970, Arkansas, pc(1)-D5, (Washington: U.S. Government Printing Office, 1972), Table 206, pp. 831-832.

* Significant at the 5 percent level.

while the white-collar workers purchased at a proportionally greater rate than did the blue-collar, unskilled or retired segments. It was determined by statistical analysis that unskilled workers and households with retired heads of households were members of a common consumer population, but it was believed to be due only to the interrelatedness of income status and occupational social status. Income status and occupational social status have a tendency to rise together but when a household head retires, regardless of the special group of which he is a member, limited money income constrains or forces the household to consume at a comparable level with the unskilled workers.

Families without school age children consumed significantly greater quantities of processed farm-cultured catfish than did families with members under 12 years of age.

All homemakers with 9 years and more of formal education purchased proportionally larger quantities of processed farm-cultured catfish than did homemakers with 8 or less years of formal education. The proportion of sales to the population of segments became even more pronounced when homemakers had one or more years of college.

Also the analysis suggests that race influences the consumption of processed farm-cultured catfish. The significant statistical results suggested that Negro households with equal incomes of White households consumed greater quantities of processed farm-cultured catfish than White households.

CHAPTER VI
ANALYSIS AND INTERPRETATION OF ECONOMIC AND SOCIAL FACTORS RELATIVE TO CONSUMER SATISFACTION

A graphic rating scale was constructed to examine consumers' satisfaction with processed farm-cultured catfish. The rating scale reflected upon the homemaker's willingness toward buying processed farm-cultured catfish again, and it gave an indication of her attitude toward the product.

The homemakers were asked to rate the processed farm-cultured catfish after it had been eaten on the following a prior significant product attributes: (1) appearance, (2) flavor, (3) aroma, and (4) texture, resulting in a satisfaction profile of the product. The graphic rating scale used to obtain satisfaction ratings for each homemaker for each product attribute was assigned numerical ratings to facilitate analysis. The scale used to obtain these evaluations were assigned the numerical ratings of: 1 for "very poor", 2 for "poor", 3 for "neither liked nor disliked", 4 for "good", and 5 for "very good".

Boyd and Massy states that an overall attitudinal evaluation of a product with salient product characteristics may be misleading. 111/ i.e., a unidimensional measure of attitude may not reflect the relative importance of significant product attributes. Therefore, prior to analysis of the attitudinal data it was deemed essential to determine whether differences in product satisfaction among the processed

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111/ Boyd and Massy, pp. 118-119.

farm-cultured catfish attributes of appearance, flavor, aroma and texture existed.

The sample data was cross tabulated by product attribute and by degree of product satisfaction and subjected to the chi-square test for k independent samples (Table 14). The resulting test value was 4.29 and suggested that no statistical difference existed between appearance, flavor, aroma and texture of processed farm-cultured catfish and the various degrees of product satisfaction. Similar results were found among the non-purchasing household segment (Table 15).

Since the product attributes were not independent in either the purchasing or non-purchasing households, a total product rating was obtained for each homemaker by summing the scores given each attribute. The minimum score for each characteristic was 1, the maximum score was 5, and the number of characteristics were 4, therefore, the total score for each individual ranged from 4 to 20. The homemakers were grouped into broad numerical rating categories according to their overall satisfaction with processed farm-cultured catfish.

Satisfaction rating group 1, "very poor", was made of homemakers whose total ratings ranged from 4 through 6. Satisfaction rating group 2, "poor", was homemakers who rated the product from 7 through 10. Group 3, "neither liked nor disliked", was composed of homemakers giving the total rating from 11 through 14. Satisfaction rating groups 4 and 5 were homemakers rating the fish from 15 through 18, and 19 and 20, respectively. The frequency of these grouped ratings were as shown in Table 16.

Table 14. Frequency of Processed Farm-Cultured Catfish Sales and the Related Chi-Square Value by Satisfaction and Major Product Attributes
Little Rock and North Little Rock

Satisfaction rating	Product attribute				
	Appearance	Flavor	Aroma	Texture	Total
	Frequency				
Very poor	8	13	10	10	41
Poor	10	10	11	13	44
Neither liked nor disliked	1	1	2	2	6
Good	50	45	51	55	201
Very good	175	173	169	162	680
Total	243	243	243	243	972
Unclassified a/	3	3	3	3	
$x^2 = 4.29$					

a/ Homemakers who did not rate processed farm-cultured catfish

Table 15. Frequency of Non-Purchasing Households that had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year and the Related Chi-Square Value by Satisfaction Rating and Major Product Attributes, Little Rock and North Little Rock

Satisfaction rating	Product attribute				
	Appearance	Flavor	Aroma	Texture	Total
Very poor	-	-	-	-	-
Poor	14	17	20	15	66
Neither liked nor disliked	8	7	8	10	33
Good	57	54	60	61	232
Very good	106	107	97	99	409
Total	185	185	185	185	

$x^2 = 3.26$

Table 16. Frequency of Processed Farm-Cultured Catfish Purchased and Non-Purchaser who had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year by Grouped Satisfaction Ratings, Little Rock and North Little Rock

Satisfaction rating	Purchaser frequency	Non purchaser frequency
Group (1) Very poor	4	-
Group (2) Poor	7	8
Group (3) Neither liked nor disliked	23	25
Group (4) Good	54	67
Group (5) Very good	155	85
Unclassified a/	3	--
Total	246	185

a/ Purchasing homemakers who did not rate processed farm-cultured catfish.

The homemakers' attitudes and opinions of processed farm-cultured catfish, as measured by their satisfaction rating scores, were related to the selected determinants of buyer behavior in an effort to determine if product form or values of the social group with which the homemaker was associated influenced their product evaluation.

Economic Factors Associated with Consumer Satisfaction

Income Status and Satisfaction Ratings

Within all three income status segments purchasing homemakers rated processed farm-cultured catfish comparatively for each degree of satisfaction (Table 17). Among the low income status households 81.4 percent of the homemakers expressed satisfaction with processed farm-cultured catfish with 58.1 percent of the homemakers rating the product 5, "very good". For the medium income status group 83.6 percent of the homemakers expressed satisfaction with the catfish and 64.2 percent gave it a rating of "very good". The ratings of the high income status segment were higher than the other two income segments with 89.2 percent expressing product satisfaction while 67.5 percent gave the fish a rating of "very good".

Of the 235 non-purchasing homemakers interviewed, 185 indicated the household had consumed processed farm-cultured catfish at least once during the past year. Although many of the homemakers were faced with a recall satisfaction situation which most likely ranged from several days to several months, the satisfaction ratings given by these homemakers were similar (non significant and in the same direction) but

Table 17. Processed Farm-Cultured Catfish Sales and Distribution by Income Status and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Income status							
	Low		Medium		High		Unclassified a/	Total
	Number	Percent	Number	Percent	Number	Percent	Number	Number
Very poor	2	4.7	1	1.5	1	.8	--	4
Poor	1	2.3	3	4.5	3	2.5	--	7
Neither liked or disliked	5	11.6	7	10.4	9	7.5	2	23
Good	10	23.3	13	19.4	26	21.7	5	54
Very good	25	58.1	43	64.2	81	67.5	6	155
Unclassified a/	--	--	--	--	--	--	3	3
Total	43	100.0	67	100.0	120	100.0	16	246

a/ Homemakers who did not report income status or perference rating or both

with less intensity on the "very good" rating of 5 and slightly more intensity on rating the product "good" or numerically 4 (Table 18).

The differences between the ratings of processed farm-cultured catfish purchasers and the ratings by the non-purchasers were tested among income status segments with chi-square for k independent samples and all values indicated non-significant differences at the 5 percent level (Appendix Table 5). Although the differences in ratings were statistically non-significant, it was believed that the more equal distribution of the 4 and 5 ratings given by the non-purchasing homemakers was a result of time lapse since consumption.

Both groups, purchasers and non-purchasers, indicated numerically and statistically that a major proportion of the homemakers were satisfied with processed farm-cultured catfish regardless of their household income status. These data not only suggest rejecting the working hypothesis that as income status increases or decreases, satisfaction with processed farm-cultured catfish vary in the opposite direction, but implied that the rate of purchasing or non-purchasing within each income segment was a function of variables, such as price, rather than the product itself.

Fifty of the 235 homemakers from non-purchasing households indicated that processed farm-cultured catfish had never been consumed in their households. When these homemakers were asked their opinion of processed farm-cultured catfish, 31 responded that they thought the product would be all right, 6 stated they did not have an opinion, and 13 stated they didn't think they would like the product (Appendix Table 6). Of these 50 homemakers 26 indicated they possibly would purchase

Table 18. The Number and Percentage Distribution of 185 Non-Purchasing Households that had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year, by Income Status and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Income status							Total
	Low		Medium		High		Unclassified a/	
	Number	Percent	Number	Percent	Number	Percent	Number	Number
Very poor	--	--	--	--	--	--	--	--
Poor	4	14.3	--	--	3	3.0	1	8
Neither liked or disliked	2	7.1	7	14.3	13	13.2	3	25
Good	9	32.2	22	44.9	33	33.3	3	67
Very good	13	46.4	20	40.8	50	50.5	2	85
Total	28	100.0	49	100.0	99	100.0	9	185

a/ Homemakers who did not report household income status.

the product in the future, 21 indicated they would not purchase the product while 3 gave no answer. The reasons given for non-purchases and planning not to purchase processed farm-cultured catfish were in descending order: (1) the household head was a sport fisherman, (2) don't like fish, (3) catfish is a scavenger, (4) looks offensive, (5) odor is offensive, (6) the product has too many bones, and (7) doesn't have flavor.

Assuming the 50 homemakers from non-purchasing households were representative of the household population patronizing Little Rock and North Little Rock retail food markets, potential marketers of processed farm-cultured catfish should expect under a marketing program of maximum effectiveness to gain only .82 new sales per thousand store patrons (26 possible purchases/31,547 store patrons x 1,000). Since a majority of the sampled population indicates a high level of awareness and a high degree of product satisfaction, it appears that processed farm-cultured catfish marketing programs to increase sales would be more profitable if such programs were first directed toward the larger known purchasing population segment rather than toward a relatively small and reluctant population.

Product Form and Satisfaction Ratings

Homemakers' satisfaction with the form of processed farm-cultured catfish household varied considerably. A satisfactory rating score was given by 82.8 percent of the homemakers rating the pan-ready fresh steaks and a satisfactory rating was given by 81.3 and 80.0 percent, respectively, by homemakers rating the pan-ready frozen steaks and frozen breaded finger fillets. This compares with 89.3 percent of the

homemakers rating whole fresh satisfactory. Also, a higher percentage of the homemakers favored a fresh product and reflected their satisfaction by 71.4 percent of the homemakers rating whole fresh "very good" while 60.2 percent rated fresh steaks "very good". This compares to only 56.3 percent of the homemakers rating frozen steaks "very good" while only 40.0 percent rated both frozen whole and frozen breaded finger fillets "very good" (Table 19).

When these observed differences were tested by the chi-square technique, it was determined that a significant difference existed at the 5 percent level between ratings of the various product forms (Appendix Table 7). This statistical result and the data direction suggests confirming the hypothesis that homemakers would express greater satisfaction with a fresh rather than a frozen processed farm-cultured catfish product form. The test results and the data direction also suggests rejecting the working hypothesis that homemakers' satisfaction with processed farm-cultured catfish would increase the nearer the product was to a pan-ready form. The results also suggested that homemakers may be biased in their ratings of frozen forms of processed farm-cultured catfish due to past availability of fresh fish; and enhanced by the fact that frozen whole, frozen steaks, and frozen breaded finger fillets were new and relatively unfamiliar products.

Summary

The findings suggested that income status was not an important factor influencing homemakers' favorableness toward processed farm-cultured catfish but that product form did influence homemaker's satisfaction ratings of the product. A majority of the homemakers from

Table 19. Number and Percentage Distribution of Homemakers by Processed Farm-Cultured Catfish Form Purchased and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Product form: Fresh whole No.	Fresh whole Percent	Fresh steaks No.	Fresh steaks Percent	Frozen whole No.	Frozen whole Percent	Frozen steaks No.	Frozen steaks Percent	Frozen breaded finger fillets No.	Frozen breaded finger fillets Percent	Unclassified Number a/	Total Number
Very poor	1	.9	2	2.2	1	5.0	—	—	—	—	—	4
Poor	2	1.8	3	3.2	1	5.0	1	6.2	—	—	—	7
Neither liked or disliked	8	7.1	10	10.8	2	10.0	2	12.5	1	20.0	—	23
Good	20	17.9	21	22.6	7	35.0	4	25.0	2	40.0	—	54
Very good	80	71.4	56	60.2	8	40.0	9	56.3	2	40.0	—	155
Unclassified a/	1	.9	1	1.0	1	5.0	—	—	—	—	3	3
Total	112	100.0	93	100.0	20	100.0	16	100.0	5	100.0	3	246

a/ Households that did not report form of farm-cultured catfish purchased or homemakers who did not report a preference rating or both.

purchasing households and the non-purchasing households that had consumed farm-cultured catfish at least once within the past year tended to rate the product either "good" or "very good" regardless of income status.

The small group of homemakers from households that had never consumed processed farm-cultured catfish had a variety of opinions regarding the product with slightly over half indicating they would possibly buy the product at some future time. Slightly under half of this group of homemakers indicated they would not purchase processed farm-cultured catfish and gave the following reasons in descending order.

1. The household head was a sport fisherman
2. Don't like fish
3. Catfish is a scavenger
4. Looks offensive
5. Odor is offensive
6. The product has too many bones
7. Doesn't have flavor

The pattern of homemakers' satisfaction ratings for the five forms of processed farm-cultured catfish purchased were statistically significant at the 5 percent level of probability. Homemakers from households that purchased fresh whole and fresh steaks expressed greater satisfaction with their respective products than did homemakers from households that purchased frozen whole, frozen steaks, or frozen breaded finger fillets.

Social Factors Associated with Consumer Satisfaction

Occupation of Head of Household and Satisfaction Ratings

A greater proportion of homemakers from purchasing households where the household head was classified as white-collar worker tended to rate processed farm-cultured catfish "very good" compared to the other homemakers. However, a slightly greater proportion of homemakers who were associated with retired heads of households tended to rate processed farm-cultured catfish satisfactory; i.e., rated the product 4 or 5 (Table 20). The difference in satisfaction ratings of homemakers whose heads of households were classified as white-collar, blue-collar, unskilled, and retired were compared and it was determined that a significant difference existed between occupational segments and homemakers' satisfaction ratings at the 5 percent level of probability (Appendix Table 8).

Homemakers from the 185 non-purchasing households that had consumed processed farm-cultured catfish at least once during the past year rated the product in the same direction as the purchasers with regard to product satisfaction, "good" and "very good". However, a higher proportion of non-purchasing homemakers rated the product "good" compared to purchases while a smaller proportion rated the product "very good" compared to the purchasers (Table 21).

The preference ratings given by homemakers of non-purchasing households among the occupational segments were statistically compared with non-significant results at the 5 percent level (Appendix Table 10). It was believed that the differences in statistical results between purchasers and non-purchasers, as previously mentioned in the

Table 20. Processed Farm-Cultured Catfish Sales and Percent Distribution by Occupation of Head of Household and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Occupation of head of household: Group A a/ Number	Group A a/ Percent	Group B b Number	Group B b Percent	Group C c/ Number	Group C c/ Percent	Group D d/ Number	Group D d/ Percent	Unclassified e/ Number	Total Number
Very poor	1	1.1	1	1.2	1	4.0	1	2.3	--	4
Poor	2	2.2	3	3.7	2	8.0	--	--	--	7
Neither liked or disliked	7	7.7	8	9.9	6	24.0	1	2.3	1	23
Good	16	17.6	19	23.5	5	20.0	14	32.6	--	54
Very good	65	71.4	50	61.7	11	44.0	27	62.8	2	155
Unclassified e/	--	--	--	--	--	--	--	--	3	3
Total	91	100.0	81	100.0	25	100.0	43	100.0	6	246

a/ Group A includes professional, technical proprietors, managers, and administrators.

b/ Group B includes sales workers, clerical and kindred workers, craftsmen, foremen and kindred workers, operatives and kindred workers, and service specialists.

c/ Group C includes domestics, health and food service workers, and laborers.

d/ Group D includes retired heads of households.

e/ Includes households that did not report occupation of head of household or homemakers who did not report a preference rating or both.

Table 21. The Number and Percentage Distribution of 185 Homemakers From Non-Purchasing Households that had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year, by Occupation of Heads of Households and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Occupation of head of household									
	Group A a/		Group B b/		Group C c/		Group D d/		Unclassified e/	Total f/
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Number
Very poor	--	--	--	--	--	--	--	--	--	--
Poor	1	1.6	2	4.1	2	6.6	3	8.1	--	8
Neither liked or disliked	8	12.5	5	10.2	8	26.7	3	8.1	1	25
Good	24	37.5	17	34.7	12	40.0	12	32.4	2	67
Very good	31	48.4	25	51.0	8	26.7	19	51.4	2	85
Total	64	100.0	49	100.0	30	100.0	37	100.0	5	185

a/ Group A includes professional, technical, proprietors, managers, and administrators.

b/ Group B includes sales workers, clerical and kindred workers, craftsmen, foremen and kindred workers, operatives and kindred workers, and service specialists.

c/ Group C includes domestics, health and food service workers, and laborers.

d/ Group D includes retired heads of households.

e/ Includes households that did not report occupation of head of household.

f/ See Appendix Table 9 for occupations in Groups A, B, and C of the non-purchasing households.

analysis of income segments, was due to non-purchasers time lapse since consumption. That is, households that have consumed a product at a prior date may, as a group, recall without the sensitivity for distinguishing between characteristics that would label the product other than "satisfactory", "OK", "good" or some other mediocre rating.

The significant test result suggests confirming that as the social status of the occupations of the household head increases or decreases, satisfaction varies in the opposite direction. The analysis suggested that as the heads of the households advance from unskilled to the white-collar segment, the degree of satisfaction with processed farm-cultured catfish tends to increase.

Age Composition of Families and Satisfaction Ratings

Analysis of the satisfaction ratings of homemakers from purchasing families with school age children revealed a wide variation in rating among age composition segments. However, the general trend was in the direction of increased satisfaction the older the age composition of families. Approximately 80 percent of the homemakers with only children under 12 years of age rated processed farm-cultured catfish satisfactory compared to 87.5 percent of the homemakers whose families were composed of only adult members rated the product satisfactory (Table 22). Homemakers with families composed of both children under 12 and 12-18 years rated the product lower than the other three age composition groups. The differences between the age composition groups and homemakers' satisfaction ratings were subjected to the chi-square test for k independent samples and the value was significant at the 5 percent level (Appendix Table 11). This result suggested that

Table 22. Processed Farm-Cultured Catfish Sales and Distribution Percentage by Age Composition of Families and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Age composition families with members: Under 12 only		12-18		Under 12 and 12-18		Adults only 18 and above		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Very poor	--	--	--	--	1	2.9	1	.9	2
Poor	1	2.2	1	3.1	4	11.4	1	.9	7
Neither liked or disliked	8	17.4	3	9.4	8	22.9	3	2.7	22
Good	7	15.2	13	40.6	11	31.4	20	17.8	51
Very good	30	65.2	15	46.9	11	31.4	87	77.7	143
Total	46	100.0	32	100.0	35	100.0	112	100.0	225

age composition of families was not independent of satisfaction ratings and suggests confirmation of the working hypothesis that as the mean age of families increased or decreased satisfaction will vary in the opposite direction.

Of the 185 non-purchasers interviewed that had consumed processed farm-cultured catfish at least once during the past year, 166 were members of family units. When their age composition satisfaction rating relationship was compared to purchasing families, similar patterns of behavior were discovered. Homemakers from families with adult members only, 18 and above, and children 12-18 years of age rated the product satisfactory by values of 92.3 and 87.5 percent, respectively (Table 23). In contrast, 61.6 percent of the homemakers from families with only children under 12 rated the product satisfactory while 54.5 percent of the homemakers from families with both children under 12 and 12-18 years of age rated the product satisfactory. Application of the chi-square technique revealed that a significant difference among the age composition groups of non-purchasers existed at the 5 percent level (Appendix Table 12). This statistical result reaffirmed the working hypothesis implications of the processed farm-cultured catfish purchasers. That is, as the mean age of families increased or decreased, satisfaction will vary in the opposite direction.

Formal Education of the Homemaker and Satisfaction Ratings

Examination of the homemakers' satisfaction ratings among the various formal education groupings of homemakers revealed that the overall pattern of favorableness toward processed farm-cultured catfish was comparable for each grouping. Approximately 78 percent of the

Table 23. The Number and Percentage Distribution of 166 Non-Purchasing Families that had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year by Age Composition and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Age composition families with members: Under 12 only		12-18		Under 12 and 12-18		Adults only 18 and above		Total
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Very poor	--	--	--	--	--	--	--	--	--
Poor	3	11.5	1	2.5	1	4.6	2	2.6	7
Neither liked or disliked	7	26.9	4	10.0	9	40.9	4	5.1	24
Good	10	38.5	15	37.5	7	31.8	28	35.9	60
Very good	6	23.1	20	50.0	5	22.7	44	56.4	75
Total	26	100.0	40	100.0	22	100.0	78	100.0	166

homemakers with a formal education of 8 or less years expressed product satisfaction compared to 86.4 percent with 9 through 12 years of formal education, 88.4 percent with 13 through 16 years of formal education (Table 24). When the groups were compared by chi-square for k independent samples, it was determined that no significant difference existed between the groups at the 5 percent level of probability (Appendix Table 12). Although most all educational groups of homemakers expressed a degree of satisfaction with processed farm-cultured catfish, it was hypothesized that as the formal education of the homemaker increased or decreased satisfaction would vary in the same direction. However, the statistical results suggested rejecting this hypothesis. The implications were that regardless of the educational social group to which homemakers belong, their satisfaction ratings are independent of educational influence; i.e., formal education did not affect the homemakers' opinions or attitudes about processed farm-cultured catfish.

Similar findings were prevalent among the non-purchasing homemakers from households that had consumed processed farm-cultured catfish at least once during the past year (Table 25). Although the 16 or more years of formal education consisted of one homemaker, when 13 through 16 and more than 16 formal education groups were combined to meet the requirements for the chi-square technique a non-significant value at the 5 percent level was computed (Appendix Table 14). As with the homemakers from purchasing households, the homemakers from the non-purchasing households, tended to rate processed farm-cultured catfish satisfactory but the chi-square value also suggested rejecting the

Table 24. Processed Farm-Cultured Catfish Sales and Distribution Percentage by Formal Education of Homemakers and Satisfaction Ratings, Little Rock and North Little Rock

Satisfaction rating	Homemakers years of formal education										Total
	8 or less		9 through 12		13 through 16		More than 16		Unclassified a/		
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number		Number
Very poor	1	4.4	1	.8	2	2.3	--		--		4
Poor	--	--	5	4.2	2	2.3	--		--		7
Neither liked or disliked	4	17.4	10	8.5	6	7.0	2	25.0	1		2 3
Good	5	21.7	29	24.6	17	19.8	1	12.5	2		5 4
Very good	13	56.5	73	61.9	59	68.6	5	62.5	5		155
Unclassified a/	--		--		--		--		3		3
Total	23	100.0	118	100.0	86	100.0	8	100.0	11		246

a/ Households that did not report homemaker's formal education or did report a homemaker's preference rating or both.

Table 25. The Number and Percentage Distribution of 185 Non-Purchasing Households that had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year by Formal Education of the Homemaker and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Homemakers years of formal education										Total
	8 or less		9 through 12		13 through 16		More than 16		Unclassified a/		
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number		Number
Very poor	--	--	--	--	--	--	--	--	--		--
Poor	1	8.3	5	4.3	2	4.0	--	--	--		8
Neither liked or disliked	--	--	14	12.0	9	18.0	1	100.0	1		25
Good	5	41.7	41	35.0	19	38	--	--	2		67
Very good	6	50.0	57	48.7	20	40.0	--	--	2		85
Total	12	100.0	117	100.0	50	100.0	1	100.0	5		185

a/ Households that did not report homemaker's formal education.

working hypothesis that as the formal education of the homemaker increased or decreased satisfaction will vary in the same direction.

Race and Satisfaction Ratings

The race of the homemaker from purchasing households appeared to have an effect on satisfaction ratings of processed farm-cultured catfish. Approximately 87 percent of the White homemakers rated the product satisfactory -- "good" or "very good" -- compared to 76.3 percent of the Negro homemakers rating the product satisfactory (Table 26). However, when the difference between the races and satisfaction ratings were tested by chi-square at the 5 percent level, the resulting value suggested rejecting the working hypothesis that satisfaction with processed farm-cultured catfish was greater among Negro than White homemakers (Appendix Table 15); i.e., the difference observed in the sample data happened by chance.

The non-purchasers that had consumed processed farm-cultured catfish at least once during the past year were likewise stratified with similar results. Approximately 83 percent of the White homemakers rated the product satisfactory while 76.7 percent of the Negro homemakers rated the product satisfactory (Table 25). A chi-square value of .69 was computed for the data which suggested that no significant difference existed between the White and Negro satisfaction rating (Appendix Table 16).

Summary

The selected social factors, occupation of head of household, and age composition of the family all had significant differences

Table 26. Processed Farm-Cultured Catfish Sales and Distribution Percentage by Race and Satisfaction Rating, Little Rock and North Little Rock

Satisfaction rating	Race				Total
	White		Negro		
	Number	Percent	Number	Percent	Number
Very poor	2	1.0	2	3.6	4
Poor	4	2.1	3	5.5	7
Neither liked or disliked	15	7.8	8	14.6	23
Good	41	21.5	13	23.6	54
Very good	126	66.0	29	52.7	155
Unclassified a/	3	1.6	—	—	3
Total	191	100.0	55	100.0	246

a/ Households that did not report the homemaker's preference rating.

Table 27. The Number and Percentage Distribution of 185 Non-Purchasing Households that had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year by Race and Satisfaction Ratings, Little Rock and North Little Rock

Satisfaction rating	Race				Total
	White		Negro		
	Number	Percent	Number	Percent	Number
Very poor	—	—	—	—	—
Poor	5	3.2	3	10.0	8
Neither liked or disliked	21	13.5	4	13.3	25
Good	57	36.8	10	33.3	67
Very good	72	46.5	13	43.4	85
Total	155	100.0	30	100.0	185

among the segments of purchasers which indicated that the variables under study were not independent of the homemakers' satisfaction ratings of processed farm-cultured catfish. The findings associated with these results were reinforced for all but one variable by similar findings for non-purchasing households that had consumed processed farm-cultured catfish at least once during the past year. The variable that was not reinforced was the occupation, of head of household. However, it was believed that the non-significant results at the 5 percent level for the non-purchasers was related to time lapse since consumption which involved imperfect recall of the homemaker's feeling for the product at the time of its consumption.

The analysis of the social variables, formal education of the homemaker and race, revealed an independent association with purchasing homemaker's satisfaction rating of processed farm-cultured catfish. Also, this finding was further reinforced by similar results from non-purchasing homemakers from households that had consumed the product during the past year.

CHAPTER VII
SUMMARY, SUGGESTIVE IMPLICATIONS AND RECOMMENDATIONS

The production of processed farm-cultured catfish for the processed food market is one of Mississippi Delta's newest agricultural industries. Processed farm-cultured catfish does not command a dominant market in the U.S. fish industry at this time; however, it must in the near future provide the major outlet for raw cultured catfish if the business is to survive, develop, and expand.

Although the future of business firms cannot be predicted with absolute certainty, systematic planning and investigation can reduce the risk associated with the future. Based on this premise the study was undertaken to provide the processed farm-cultured catfish business firms a practical planning application of a systematic Management Planning Model (MPM) and to examine the managerial strategy of segmenting the processed farm-cultured catfish market and determine if consumers may be grouped in such a manner that their purchasing habits, preferences, and attitude would delineate a more homogeneous market for the processed farm-cultured catfish product.

Specifically, the objectives of the study were: to evaluate the processed farm-cultured catfish business in its development stage during 1968 in terms of the systematic (MPM) developed by Dr. Robert D. Hay; (2) (a) to focus on the managerial strategy of market segmentation and determine the relationships between the number of processed farm-cultured catfish sales and selected economic and socio-economic determinants of consumer market behavior and (2) (b) examine through the use of a graphic rating scale the relationships

between selected economic and social determinants of consumer market behavior and consumer satisfaction with processed farm-cultured catfish.

Although the study was primarily exploratory, some suggestive inferences can be made about the processed farm-cultured catfish business and its product.

MPM Application

During 1968 various groups of Mississippi Delta cultured catfish farmers acting cooperatively became passively involved in planning the production of processed farm-cultured catfish to alleviate the dilemma of cultured catfish overproduction. However, from evaluating the processed farm-cultured catfish business during this development stage in terms of the Hay (MPM) it was suggestive that phases of the overall planning process were not thoroughly investigated.

In the mental planning stage of processed farm-cultured catfish the external technological-economic, social-cultural, political-legal, and religious-ethical influence on the thinking processes of the cooperative planning groups suggested favorable conditions for the perceived new business. There had been improvements in cultured catfish feeding, pond construction, disease control, breeding, transportation, and freezing. The quantity and quality of workers in the most favorable production region of the U.S. appeared to be available, disposable personal income was increasing throughout the economy and was projected to continue, the price-quality relationship of processed farm-cultured catfish was considered equitable, traditional geographical and race preference for catfish was strong in the southern and

midwestern states, and the political stability and laws at all governmental levels were providing an economic environment that was at least unbiased.

However, after the formal proposal was made to more thoroughly investigate processed farm-cultured catfish production and the environmental appraisal section of the (MPM) implemented, several significant investigative areas that were essential to the success of processed farm-cultured catfish production began to exhibit weak or unfavorable planning by the cooperative groups. These areas encompassed the external economic factors of management availability, management quality, marketing competition and the external non-economic factors of regional preference, race, age composition of household, occupational groups, formal education of the homemaker, and religious preference. Although the cooperative planning groups recognized that a successful manager should possess the ability to coordinate the details of processing, marketing, and distribution to the production timing of the individual producers, there was no attempt to determine if management was available or what quality of management would assure the success of the envisioned business. On the other hand market competition data were available to the cooperative planning groups but over-confidence in processed cultured catfish's superior quality and taste impaired the implications of competition from processed imported and domestic wild fish. Processed-imported and domestic wild fish were selling in consumer markets at prices relatively lower than the 80 cents per pound envisioned price of processed farm-cultured catfish and projections were that imports of wild fish would continue to increase.

In 1968 research relative to the influences that the previously stated external non-economic factors had on processed farm-cultured catfish had not been conducted. However, research data were available and had been reported to the cultured and wild fish industry on similar products which indicated that all of the external non-economic factors significantly influenced sales and/or attitude toward fishery products. In the cooperative groups' planning and investigative processes it was stated that regional preference and race were recognized as decisioning influences but they were never investigated until after processed farm-cultured production was implemented and then only sparingly. The external non-economic factors of age composition of household, occupational groups, formal education of the homemaker, and religious preference apparently was of lesser importance since they have never been researched relative to their influences on processed farm-cultured catfish.

Even though the previously discussed external economic and non-economic factors were areas of weak planning, the consensus of factors examined by the cooperative groups implied favorability for processed farm-cultured catfish production. Based on the known and unknowns of these factors the cooperative planning groups proceeded to make assumptions about the envisioned business venture, determined company objectives, and analyzed the overall general economic conditions of the economy and make forecasts for the processed farm-cultured catfish industry. Target markets were identified and a company forecast was projected based on projected production and plant capacity. Again, in terms of the (MPM) all areas projected favorableness and even optimism for processed farm-cultured catfish.

In this atmosphere of favorability the cooperative planning groups made the decision to investigate further the potential success of processed farm-cultured catfish and began planning the envisioned firm's operating strategies for manufacturing, finance, personnel, and marketing. In this phase of planning the cooperative groups integrated the total environmental appraisal analyses with a perceived optimum plant production capacity and then coordinated this information among the operating functions. Although market planning for promoting processed farm-cultured catfish was almost non existent and projected an area of uncertainty, overall favorability again prevailed for processed farm-cultured catfish production. Operating objectives for each of the functional areas were determined and related to the firm's overall objectives for balance and consistency. In terms of the (MPM), the cooperative planning groups determined their total planning process contained balance and consistency and should be implemented. A legal farm cooperative was formed at Pine Bluff, Arkansas and the plan was implemented in 1968. Simultaneously cooperative groups at Dumas, Arkansas and Quitman, Georgia formed legal farmer cooperatives and implemented similar plans. During 1968 the plants at Pine Bluff and Dumas began operations. In 1969 four other plants became operational and in 1970 six additional facilities commenced operating. Eight of the facilities were located in the Mississippi Delta Region.

Historical documentations indicate that serious problems began to appear in the processed farm-cultured catfish industry as early as 1969 with unintentional inventory buildups and declining sales.

These and other problems set in motion an evaluation of the original planning process to be followed by corrective actions and recycling of the entire planning process. Although multiple areas were re-evaluated because they were not contributing to the overall objectives of the processed farm-cultured catfish firms, the marketing strategy was highlighted as requiring primary adjustments in the area of consumer preferences and demand identification. These were major areas (regional preference, race, age composition of household, occupational groups, formal education of the homemaker, and religious preference) that in terms of the (MPM) exhibited weak and unfavorable planning processes.

Segmenting the Processed Farm-Cultured Catfish Market

In light of the (MPM) application and attendant implications, the research findings from focusing on the marketing strategy section of the (MPM) and examining the managerial strategy of segmenting the processed farm-cultured catfish market will be summarized with the attendant implications.

To accomplish the task of segmenting the processed farm-cultured catfish market, two techniques for measuring variations in consumer behavior were used. First, a matched-lot experimental design was used to display farm-cultured catfish for sale in six Little Rock and North Little Rock supermarkets to appraise consumers preference and marketing behavior under actual marketing conditions. Five forms of farm-cultured catfish, (whole fresh, whole frozen, fresh steaks, frozen steaks, and frozen breaded finger fillets) were displayed to determine if the homemakers would discrimimate

between different forms. Management from the six cooperating supermarkets provided data on the total number of purchases of each form of processed farm-cultured catfish and the number of customers patronizing each supermarket during the test periods. Secondly, a personal interview survey was conducted among the households that purchased processed farm-cultured catfish and a similar number of non processed farm-cultured catfish purchasers patronizing the supermarkets to acquire economic and social family characteristics and to examine consumer satisfaction with and attitude toward the test product.

A graphic rating scale was used to rank the respondents in terms of favorableness of their attitudes toward the product. Answers to questions from the personal interviews were used to construct a satisfaction rating scale. These questions were designed to obtain the preference as well as the intensity of the homemaker's likes and dislikes toward processed farm-cultured catfish.

Nonparametric statistics, chi-square for one-sample tests and chi-square for k independent samples, were used to test for significant difference between the economic and social segments of the population. The nonparametric statistical tests were selected since the models do not specify conditions about parameters of the population from which the sample subjects were drawn. Also, since part of this study was concerned with ordinal ranking of data, nonparametric statistics were more appropriate as the strength of measurement.

Considerable variability occurred among the supermarkets in the sales of processed farm-cultured catfish. The number of sales ranged from a low of 3.4 to a high of 18.5 per thousand supermarket patrons.

When the supermarkets were grouped together sales per thousand supermarket patrons averaged 7.8 which represented approximately 18 pounds of processed farm-cultured catfish. When the processed farm-cultured catfish purchasers were segmented according to income status and compared to the population distribution of the households within the segments, sales were significantly higher in the $10,000 and above segment than in the less than $5,000 or $5,000 to $9,999 income status segments. Also, there was a tendency for households to increase their purchases of processed farm-cultured catfish as income status increased.

Of the 246 processed farm-cultured catfish purchasers interviewed, approximately 83 percent purchased a fresh product while approximately 17 percent purchased a frozen product. The most frequent reasons given by the homemakers for their preference of a fresh product were:

1. Better taste, flavor, or appearance
2. Prefer fresh food

The most frequent reasons given by homemakers for selecting a frozen product were:

1. For home freezer to provide convenience
2. Fresh had all sold

Approximately 54 percent of the homemakers expressed a preference for the non pan-ready whole fresh and whole frozen processed farm-cultured catfish while steaks were a second choice in both the fresh and frozen form and breaded finger fillets were the third choice in the frozen category.

Although homemakers expressed a significant preference for the non pan-ready product, when homemakers were asked how processed

farm-cultured catfish were usually served in the household only 28.0 percent indicated as whole fish. These data clearly suggest that the form of the product purchased was not the form of product consumed. Also, a majority of the homemakers that purchased the various products indicated satisfaction with the convenience of the preferred product which would suggest that several homemakers may prefer to purchase a whole fish because that form lends itself to a particular style of preparation preferred by the homemaker or members of the household which is unique and unlikely to be available through a retail food market.

Variations in sales of processed farm-cultured catfish between white-collar and the other three occupational segments were substantial. Households of the white-collar workers purchased proportionally more processed farm-cultured catfish sold through retail food markets than the other occupational segments. Households of the blue-collar workers purchased proportionally less than was anticipated while there was no pronounced difference between the households of unskilled workers and households of retired heads.

Households with only children under 12 years of age purchased significantly less processed farm-cultured catfish than did households with adult members only. When households with members under 18 years of age were compared to households with only adult members the difference between the segments was insignificant at the 5 percent level.

Homemakers with 9 or more years of formal education purchased proportionally larger quantities of processed farm-cultured catfish than did homemakers with 8 or less years of formal education. The

proportions became even more pronounced when homemakers had one or more years of college.

Race was the only ethnic characteristic analyzed in this study. When actual sales were compared to actual population ratios, a significant difference existed between White and Negro household purchases. Negro households purchased more processed farm-cultured catfish than White households.

Income status, one of the selected conomic factors anticipated to influence homemakers' favorableness toward farm-cultured catfish (as measured by their satisfaction rating scores) exhibited an insignificant relationship with satisfaction ratings. These findings were not only suggestive for purchasing households of processed farm-cultured catfish, but this relationship was also found among non-purchasing households that had consumed processed farm-cultured catfish at least once within the past year. Homemakers from both purchasing and non-purchasing households tended to rate the fish "good" of "very good" which suggested that the rate of purchase or non-purchase within income segments was a function of variables, such as price, rather than the product itself.

Homemakers from households purchasing the various forms of processed farm-cultured catfish differentiated significantly in their satisfaction ratings of the fish. Homemakers from households that purchased fresh whole and fresh steaks expressed greater satisfaction with these products than did homemakers from households that purchased whole frozen, frozen steaks, or frozen finger fillets.

The socio-economic factors of occupation of head of household, and age composition of family, all had significant differences

in their satisfaction ratings within the respective segments while the socio-economic factors of formal education of the homemakers and race had an insignificant influence on satisfaction ratings.

A positive relationship was indicated between occupational segments and the satisfaction rating score of homemakers. That is, as the occupational status of the head of household increased, the homemaker's favorableness toward processed farm-cultured catfish increased. Homemakers from the unskilled occupational segment rated processed farm-cultured catfish lower than did the other three segments and substantially lower than the ratings given by homemakers from the white and blue-collar segments.

Homemakers from families with children under 18 years of age tended to rate processed farm-cultured catfish considerably below the rating given by homemakers from families with adult members only (18 and above). Rating differences were less pronounced when families with only children 12-18 were compared to families with only adult members.

Although homemakers with 13 or more years of formal education purchased a greater proportion of the processed farm-cultured catfish sold through retail food markets than did homemakers with lesser education, satisfaction ratings were unaffected by formal education level; i.e., formal education does not influence the homemakers' opinions or attitudes about processed farm-cultured catfish.

When Negro and White homemakers' satisfaction ratings were compared, the relationships were insignificant at the 5 percent level of probability.

The low ratio of sales (7.8) which represents approximately 18 pounds of farm-cultured catfish per thousand store patrons in the market studied suggests that the products were relatively priced too high and lower price red meats or wild fish was purchased as a substitute. However, it should be emphasized that whole fresh processed farm-cultured catfish was an established product while fresh steaks, frozen whole, frozen steaks, and frozen breaded finger fillets were new product forms. Also, there were no promotional or advertising programs accompanying the market debut of the new product forms. Too, only one point on the consumer's demand curve was analyzed which did not lend itself to determining the demand elasticities faced by retail food markets at various or differentiated prices.

Although prices were held constant throughout this study and nothing suggestive can be stated about the quantity changes of the product forms associated with various and differentiated prices, there was evidence that processors and retail marketers need to consider specifically two economic determinants of consumer behavior in developing a marketing program for processed farm-cultured catfish. First, there was a substantially higher rate of sales to households in the high income status segments while satisfaction (determined by homemakers satisfaction rating scores) with the products within the various income status segments exhibited no significant difference. Suggestive implications are that to increase sales, promotions of processed farm-cultured catfish should be directed at the higher income segment of the market. Secondly, the form or forms of processed farm-cultured catfish necessary for maximum penetration as indicated by sales and

homemakers' satisfaction ratings reflected a preference for and greater satisfaction with (1) fresh whole fish and (2) fresh steaks.

Variations in sales of and the favorableness toward processed farm-cultured catfish in the socio-economic segments suggests to the catfish industry market segments with more homogeneous purchasing habits and attitudes thus giving them a means of identifying the potential target market for their products.

When sales and homemakers' satisfaction ratings were compared among occupational segments, implications were that the white-collar and retired segments purchase processed farm-cultured catfish at a higher rate respectively than the blue-collar or unskilled segments.

As the number of children under 18 decreased in families, the rate of sales and satisfaction with processed farm-cultured catfish tended to increase.

Homemakers with 13 or more years of formal education purchased processed farm-cultured catfish at a much higher rate than homemakers with less education; however, there was no difference in favorableness toward the product regardless of education level. It was believed that homemakers with higher levels of formal education had been more closely subjected to nutritional values of household diets.

The difference in rate of sales among homemakers from Negro and White households denotes two separate market segments. However, both groups expressed equal satisfaction with processed farm-cultured catfish.

The selected economic and socio-economic determinants of consumer behavior are not all inclusive since interrelatedness exists

among many of the factors studied, however, implications are that short range planning of the processed catfish industry should be directed to increasing consumer demand for their products through marketing programs directed toward one or a combination of favorable economic and socio-economic segments rather than through product improvement or differentiation.

Of the variables studied implications are that in the Little Rock-North Little Rock and similar markets, processed farm-cultured catfish sales should be improved through the use of fresh whole and/or fresh processed farm-cultured catfish steaks and by directing marketing programs toward high income households (both Negro and White) composed largely of adult members.

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APPENDIX A

Appendix Table 1. Income Status of Households by Number and Percentage Distribution, Little Rock and North Little Rock

Income	Number of household a/	Percent of total
Less than $5,000	34,299	33.2
$5,000 to $9,999	35,236	34.2
$10,000 and above	33,683	32.6
Total	103,218	100.0

a/ U. S. Department of Commerce, Bureau of the Census, U. S. Census of Population, 1970, Arkansas, PC(1)-D5, (Washington: U. S. Government Printing Office, 1972), Table 206, p. 831.

Appendix Table 2. Occupations Classified as Group A, White-Collar Group B, Blue-Collar, and Group C, Unskilled Workers, Little Rock and North Little Rock

Group A White-Collar	Group B Blue-Collar	Group C Unskilled workers
Banking Officers	Salesmen	Nurses Aids
Directors of Institutions	House Painters	Roofing Helpers
Physicians	Bookkeepers	Sitters
Draftsmen	Hospital Technicians	Domestic Laborers
Accountants	Factory Representatives	Construction Helpers
Foresters	Telephone Technicians	Delivery Personnel
Traffic Managers	Electricians	Laboratory Helpers
Contractors	Railway Specialists	Porters
Appraisers	Appliance Technicians	Elevator Operators
Biologists	Butchers	Day Laborers
Statisticians	Truck and Transport Drivers	Warehouse Laborers
Company or Department Heads and Supervisors	Sheet Metal Workers	Factory Laborers
Registered Nurses	Brick Layers	Kitchen Helpers
Social Workers	Carpet Layers	
Commercial Artists	Machine Operators	
Teachers-College-Secondary-Elementary	Welders	
Dentists	Lens Edgers	
Real Estate Brokers	Payroll and Postal Clerks	
Business Owner-Operators	Upholstery Specialists	
Editors	Bank Clerks	
Engineers	Warehouse Specialists	
Attorneys	Bakers	
Architects	Ceramic Tile Setters	
Budget Analysts	Roofers	
Counselors	Dock Specialists	
Professional Inspectors	City Police (non-supervising)	
Chemists	Carpenters	
	Barbers	
	Mechanics	
	Shop Foremen	
	Auto Parts Specialists	

Appendix Table 3. Number and Percentage Distribution of Working and Retired Population of Little Rock and North Little Rock Fourteen Years of Age and Older a/

Working and retired population of Little Rock and North Little Rock fourteen years of age and older		
Group	Number	Percent of total
Professional, technical, proprietors, managers, and administrators	30,332	20.5
Sales workers, clerical and kindred workers, craftsmen, foremen and kindred workers, operatives and kindred workers, and service specialists b/	73,945	49.9
Domestic, health, and food service workers, and laborers	18,976	12.8
Retired population c/	24,902	16.8
Total working and retired population	148,155	100.0

a/ U. S. Department of Commerce, Bureau of the Census, U. S. Census of Population, 1970, Arkansas, PC(1)-D5, (Washington: U. S. Government Printing Office, 1972), Tables 153, 171, 174, pp. 505, 590-596, 632-634.

b/ Service specialists include airline stewardesses, barbers, firemen, guards and watchmen, marshals and constables, police and detectives, sheriffs and bailiffs, hair dressers and cosmetologists, dental assistants, and licensed practical nurses.

c/ Includes persons sixty-five years of age and older not in the labor force.

Appendix Table 4. Number and Percentage Distribution of Households in Little Rock and North Little Rock by White and Negro Race a/

	Households	
Race	Number	Percent of total
Negro	16,256	15.7
White	86,962	84.3
Total	103,218	100.0

a/ U. S. Department of Commerce, Bureau of the Census, U. S. Census of Population, 1970, Arkansas, PC(1)-D5, (Washington: U. S. Government Printing Office, 1972), Table 153, p. 506.

Appendix Table 5. Chi-Square for k Independent Samples Relating Processed Farm-Cultured Catfish Satisfaction Ratings of Homemakers From Purchasing Household and Homemakers From Non-Purchasing Households That Had Consumed the Product During the Past Year Among Income Status Groups, Little Rock and North Little Rock

Purchasers

Satisfaction rating	Income status: Low Number Observed	Low Number Expected	Medium Number Observed	Medium Number Expected	High Number Observed	High Number Expected	Total
Very poor, poor, and neither liked or disliked	8	(6)	11	(9.3)	13	(16.7)	32
Good	10	(9.2)	13	(14.3)	26	(25.6)	49
Very good	25	(27.8)	43	(43.4)	81	(77.7)	149
Total	43		67		120		230

$\chi^2 = 2.47$

Non-Purchasers

Satisfaction rating	Income status: Low Number Observed	Low Number Expected	Medium Number Observed	Medium Number Expected	High Number Observed	High Number Expected	Total
Very poor, poor, and neither liked or disliked	6	(4.6)	7	(8.1)	16	(16.3)	29
Good	9	(10.2)	22	(11.8)	33	(36.0)	64
Very good	13	(13.2)	20	(23.1)	50	(46.7)	83
Total	28		49		99		176

$\chi^2 = 2.70$

Appendix Table 6. Opinions of Homemakers From Households That Had Never Consumed Processed Farm-Cultured Catfish by Stated Consumption Intentions and Reasons for Non-Purchases or Planned Non-Purchases, Little Rock and North Little Rock

	Homemakers opinions of farm-cultured catfish			
	Would be all right	No opinion	Would not like	Total
	Number	Number	Number	Number
Homemakers	31	6	13	50
Consumption intentions				
May purchase in the future	24	2	0	26
Would not purchase	(7)	(1)	(13)	(21)
No answer	0	3	0	3
TOTAL	31	6	13	50
Reasons for non-purchases or planned non-purchases				
Don't like fish	0	0	4	4
Head of household is a sport fisherman	4	0	0	4
The fish is a scavenger	0	0	2	2
Looks offensive	0	0	2	2
Odor offensive	1	0	0	1
Too many bones	1	0	0	1
Doesn't have flavor	0	0	1	1
No reason given	1	1	4	6
TOTAL	(7)	(1)	(13)	(21)

Appendix Table 7. Chi-Square for k Independent Samples Relating Processed Farm-Cultured Form and Preference Ratings of Homemakers From Purchasing Households, Little Rock and North Little Rock

Satisfaction rating	Product form: Fresh whole Number Observed	Expected	Fresh steaks Number Observed	Expected	Frozen whole Number Observed	Expected	Frozen steaks and frozen breaded finger fillets Number Observed	Expected	Total Number
Very poor, poor, and neither liked or disliked	11	(15.5)	15	(12.9)	11	(2.7)	4	(2.9)	34
Good	20	(24.7)	21	(20.4)	7	(4.2)	6	(4.7)	54
Very good	80	(70.8)	56	(58.7)	8	(12.1)	11	(13.4)	155
Total	111		92		19		16		243

$\chi^2 = 34.18$*

* Significant at the 5 percent level.

Appendix Table 8. Chi-Square for k Independent Samples Relating Occupation of Head of Household and Homemakers' From Purchasing Households Preference Ratings of Processed Farm-Cultured Catfish, Little Rock and North Little Rock

Satisfaction rating	Head's of households occupation								Total Number
	Group A a/		Group B b/		Group C c/		Group D d/		
	Number Observed	Expected	Number Observed	Expected	Number Observed	Expected	Number Observed	Expected	
Very poor, poor, and neither liked or disliked	10	(12.5)	12	(11.1)	9	(3.4)	2	(5.9)	33
Good	16	(20.5)	19	(18)	5	(5.6)	14	(9.7)	54
Very good	65	(58)	50	(51.6)	11	(15.9)	27	(27.4)	153
Total	91		81		25		43		240

$\chi^2 = 19.78$*

a/ Group A includes professional, technical, proprietors, managers, and administrators.

b/ Group B includes sales workers, clerical and kindred workers, craftsmen, foremen and kindred workers, operativeds and kindred workers, and service specialists.

c/ Group C includes domestic, (health and food service workers), and laborers.

d/ Group D includes retired heads of households.

* Significant at the 5 percent level.

Appendix Table 9. Occupations Classified as Group A, White-Collar, Group B, Blue-Collar, and Group C, Unskilled Workers, Little Rock and North Little Rock

Group A White-Collar	Group B Blue-Collar	Group C Unskilled workers
Engineers	Salesmen	Domestic Laborers
Company or Department Heads and Supervisors	Mechanics	Nurses Aids
Real Estate Brokers	Carpenters	Day Laborers
Teachers-College-Secondary-Elementary	Brick Layers	Railway Laborers
Business Owner-Operators	Bookkeepers	Construction Helpers
Physicians	Electricians	Sitters
Auditors	Truck and Transport Drivers	Janitors
Pilots	Cashiers	Metal Plant Laborers
Accountants	City Police (non-supervising)	Service Station Laborers
Insurance Underwriters	Ticket Agents	
State Administrators	Roofers	
Banking Officers	Postmen	
Nutritionists	Service Technicians	
Dentists	Auto Parts Specialists	
Bio-Chemists	Office Secretaries	
Contractors	Appliance Technicians	
Draftsmen	Painters	
Pharmacists	Heavy Equipment Operators	
Attorneys	Manufacturing Line Foremen	
Architects	Television Technicians	
Ministers	Factory Representatives	
Registered Nurses		

Appendix Table 10. Chi-Square for k Independent Samples Relating Processed Farm-Cultured Catfish Preference Ratings of Homemakers From Non-Purchasing Households That Had Consumed the Product at Least Once During the Last Year Among Occupations of Heads of Households, Little Rock and North Little Rock

Preference rating	Occupation of head of household								Total Number
	Group A		Group B		Group C		Group D		
	Number Observed	Expected	Number Observed	Expected	Number Observed	Expected	Number Observed	Expected	
Very poor, poor, and neither liked or disliked	9	(11.4)	7	(8.7)	10	(5.3)	6		32
Good	24	(23.1)	17	(17.7)	12	(10.8)	12		65
Very good	31	(29.5)	25	(22.6)	8	(13.8)	19		83
Total	64		49		30		37		180

$\chi^2 = 8.08$

Appendix Table 11. Chi-Square for k Independent Samples Relating Age Composition of Purchasing Families to Preference Ratings of Processed Farm-Cultured Catfish, Little Rock and North Little Rock

Satisfaction rating	Age composition families with members: Under 12 only — Number Observed	Expected	12-18 — Number Observed	Expected	Under 12 and 12-18 — Number Observed	Expected	Adults only — Number Observed	Expected	Total Number
Very poor, poor, and neither liked or disliked	9	(6.3)	4	(4.4)	13	(4.8)	5	(15.4)	31
Good	7	(13)	13	(7.3)	11	(7.9)	20	(25.4)	51
Very good	30	(29.2)	15	(20.3)	11	(22.2)	87	(55.3)	143
Total	46		32		35		112		225

$\chi^2 = 55.70$*

* Significant at the 5 percent level.

Appendix Table 12. Chi-square for k Independent Samples Relating Age Composition of Non-Purchasing Families That Had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year to Satisfaction Ratings, Little Rock and North Little

Satisfaction rating	Age composition Families with members: Under 12 only Number Observed	Expected	12-18 Number Observed	Expected	Under 12 and 12-18 Number Observed	Expected	Adults only Number Observed	Expected	Total Number
Very poor, poor, and neither liked or disliked	10	(4.9)	5	(7.5)	10	(4.1)	6	(14.6)	31
Good	10	(9.4)	15	(14.5)	7	(8.0)	28	(28.2)	60
Very good	6	(11.7)	20	(18.1)	5	(9.9)	44	(35.2)	75
Total	26		40		22		78		166

$\chi^2 = 27.49$*

* Significant at the 5 percent level.

Appendix Table 13. Chi-Square for k Independent Samples Relating Formal Education of Homemakers From Households Purchasing Processed Farm-Cultured Catfish and Satisfaction Ratings, Little Rock and North Little Rock

Satisfaction rating	Homemakers years of formal education								Total Number
	8 or less		9 through 12		13 through 16		More than 16		
	Number Observed	Expected	Number Observed	Expected	Number Observed	Expected	Number Observed	Expected	
Very poor, poor, and neither liked or disliked	5	(3.2)	16	(16.6)	10	(12.1)	2	(1.1)	33
Good	5	(5.1)	29	(26.1)	17	(19)	1	(1.8)	52
Very good	13	(14.7)	73	(75.3)	59	(54.9)	5	(5.1)	150
Total	23		118		86		8		235

$\chi^2 = 3.60$

Appendix Table 14. Chi-Square for k Independent Samples Relating Formal Education of Homemakers From Non-Purchasing Households That Had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year and Satisfaction Ratings, Little Rock and North Little Rock

Satisfaction rating	Homemakers' years of formal education						Total Number
	8 or less		9 through 12		13 through 16 and more than 16		
	Number		Number		Number		
	Observed	Expected	Observed	Expected	Observed	Expected	
Very poor, poor, and neither liked or disliked	1	(2.1)	19	(20.8)	12	(9.1)	32
Good	5	(4.3)	41	(42.2)	19	(18.4)	65
Very good	6	(5.5)	57	(53.9)	20	(23.5)	83
Total	12	(5.5)	117		51		180

$\chi^2 = 2.08$

Appendix Table 15. Chi-Square for k Independent Samples Relating Race of Purchasing Households and Homemakers' Satisfaction Ratings of Farm-Cultured Catfish, Little Rock and North Little Rock

Satisfaction rating	Race				Total Number
	White		Negro		
	Number		Number		
	Observed	Expected	Observed	Expected	
Very poor and poor	6	(4.0)	5	(2.5)	11
Neither liked or disliked	15	(17.8)	8	(5.2)	23
Good	41	(41.8)	13	(12.2)	54
Very good	126	(119.9)	29	(35.1)	155
Total	188		55		243

$\chi^2 = 6.89$

Appendix Table 16. Chi-Square for k Independent Samples Relating Race of Homemakers From Non-Purchasing Households That Had Consumed Processed Farm-Cultured Catfish at Least Once During the Past Year and Satisfaction Ratings, Little Rock and North Little Rock

Satisfaction rating	Race				Total Number
	White		Negro		
	Number		Number		
	Observed	Expected	Observed	Expected	
Very poor, poor, and neither liked or disliked	26	(27.6)	7	(5.4)	33
Good	57	(56.1)	10	(10.9)	67
Very good	72	(71.2)	13	(13.8)	85
Total	155		30		185

$\chi^2 = .69$

APPENDIX B

FARM-CULTURED CATFISH STUDY
PURCHASER

Name_____ Date_____

Address_____

Telephone_____ Interviewer_____

Race_____

What is the most convenient time to be interviewed? _____

Form purchased: quantity

a. fresh whole _____ _____

b. frozen whole _____ _____

c. fresh steaks _____ _____

d. frozen steaks _____ _____

e. frozen breaded fillets _____ _____

1. Do you usually buy farm-cultured catfish? yes_____ no_____

   If no, what kind? _____perch, _____cod, _____trout, _____other catfish,

   _____fish sticks, _____other, _____variety.

2. How often have you eaten farm raised catfish in the last year?

   a. once_____ c. 4 to 6 times_____

   b. 1 to 3 times _____ d. 7 or more times_____

3. Do you ever substitute farm raised catfish in the food budget just for food variety?

   a. yes _____ If yes, what meat is it substituted for?_____

   b. no _____

4. How did you like the appearance of the _____ you purchased at Kroger's during our study?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable explain _____

5. How did you like the flavor of the _____ you purchased at Kroger's during our study?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable explain _____

6. How did you like the texture of the _____ you purchased at Kroger's during our study?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable explain _____

7. How did you like the aroma of the _____ you purchased at Kroger's during our study?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable explain _____

8. How do you usually prepare farm-cultured catfish?

a. form
   1. whole _____
   2. breaded fillets _____
   3. steak _____
   4. other _____

b. preparation
   1. deep fried _____
   2. broiled _____
   3. baked _____
   4. other _____

9. Why did you purchase a (fresh _____ frozen _____) catfish product rather than a (fresh _____ frozen _____) product during our study at Krogers? _____

10. What size of catfish product package do you prefer?

    a. less than 1 pound _____

    b. 1 to 2 pounds _____

    c. 2 to 3 pounds _____

    d. 3 or more pounds _____

11. When purchasing whole fresh or frozen catfish, what size individual fish do you prefer?

    a. less than 6 oz. _____

    b. 6 - 12 oz. _____

    c. 13 oz. or more _____

12. Would you prefer farm raised catfish in a more convenient, pre-cooked form?

    a. yes _____ What form? breaded, TV dinner, etc.

    b. no _____

13. Do you prefer farm raised catfish to catfish caught from a river or lake?

    yes _____ no _____ no difference _____

14. If the price of farm raised catfish was the same as other types of fish that you like, would you ever buy catfish?

    a. yes _____ b. no _____

15. If the price of farm raised catfish were slightly higher than other types of fish you like, would you ever buy catfish?

    a. yes _____ b. no _____

16. If price of farm raised catfish were slightly lower than other types of fish that you like, would you ever buy catfish?

    a. yes _____ b. no _____

17. Do you think that people might buy farm raised catfish more often if it had a different name than "catfish"?

    a. yes _____ b. no _____

We need to know a little about you and your family to help us determine characteristics of families who like and consume catfish. Your answers will not be used as individuals -- but will be averaged with the entire group of people interviewed. However, do not feel obligated to answer any question to which you object.

18. Do you have a religious preference?

    a. Pretestant _____

    b. Catholic _____

    c. Jewish _____

    d. Other _____

19. How many members of your family are: _____ under 12 years of age, _____ 12 to 18 years, _____ adults?

20. What is the occupation of the head of the household? _____

21. Do you work away from the home? yes _____ no _____

    If yes, occupation _____

22. What is the last grade in school completed? _____

    Head of household completed _____

23. Which group represents your age?

    under 25 _____ 25-34 _____ 35-44 _____ 45-54 _____ 55 or more _____

24. Which group represents your gross household income?

under $5,000_____ $5,000 to $9,999 _____ $10,000 and over _____

FARM-CULTURED CATFISH STUDY
NON PURCHASER

Name_____ Date_____

Address_____

Telephone_____ Interviewer_____

Race_____

What is the most convenient time to be interviewed? _____

1. Do you like fish?

   a. yes _____

   b. no _____ (if no, skip to question 3)

2. What kinds of fish do you usually buy?

   _____perch, _____cod, _____trout, _____catfish, _____fish sticks,

   _____other

3. Have you ever eaten farm raised catfish?

   a. yes _____ (if yes, skip to question 6)

   b. no _____

4. If you have never eaten catfish, what is your opinion of it?

   a. Don't have an opinion about it _____

   b. I think it would be all right _____

   c. I don't think I would like it _____ (Why not?) _____

   _____

5. Do you think that you would ever buy catfish?

   a. yes _____ b. no _____ c. don't know _____

   If no, why not? _____

   _____

   (skip to question 23)

6. How often have you eaten farm raised catfish in the last year?

   a. never _____ d. 4 to 6 times _____

   b. once _____ e. 7 or more times _____

   c. 1 to 3 times _____

7. Where do you usually eat catfish?

   a. at home _____

   b. restaurant _____

   c. other _____

8. Do you ever substitute farm raised catfish in the food budget just for food variety?

   a. yes _____ If yes, what meat is it substituted for? _____

   b. no _____

9. The last time you ate farm raised catfish, how did you like its appearance?

   very good _____ neither liked nor disliked _____ poor _____

   good _____ very poor _____

   If opinion unfavorable, explain _____

10. The last time you ate farm raised catfish, how did you like its flavor?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable, explain _____

11. The last time you ate farm raised catfish, how did you like its texture?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable, explain _____

12. The last time you ate farm raised catfish, how did you like its aroma?

very good _____ neither liked nor disliked _____ poor _____

good _____ very poor _____

If opinion unfavorable, explain _____

13. How do you usually prepare farm-cultured catfish?

a. Form

1. whole _____
2. breaded fillets _____
3. steak _____
4. other _____

b. Preparation

1. deep fried _____
2. broiled _____
3. baked _____
4. other _____

14. Would you prefer (fresh ____ frozen ____) catfish products?

Why? _____

15. What size of catfish product package do you prefer?

    a. less than 1 pound _____

    b. 1 to 2 pounds _____

    c. 2 to 3 pounds _____

    d. 3 or more pounds _____

16. When purchasing whole fresh or frozen catfish, what size individual fish do you prefer?

    a. less than 6 oz. _____

    b. 6 - 12 oz. _____

    c. 13 oz. or more _____

17. Would you prefer farm raised catfish in a more convenient, pre-cooked form?

    a. yes _____ What form? breaded, TV dinner, etc. _____

    b. no _____

18. What kind of catfish would you prefer to buy?

    a. farm raised _____ b. caught from river or lake _____

    c. no difference _____

19. If the price of catfish was the same as other types of fish that you like, would you ever buy catfish?

    a. yes _____ b. no _____

20. If the price of catfish were slightly higher than other types of fish you like, would you ever buy catfish?

    a. yes _____ b. no _____

21. If price of catfish were slightly lower than other types of fish that you like, would you ever buy catfish?

    a. yes _____ b. no _____

22. Do you think that people might buy catfish more often if it had a different name than "catfish"?

a. yes _____ b. no _____

We need to know a little about you and your family to help us determine characteristics of families who like and consume catfish. Your answers will not be used as individuals -- but will be averaged with the entire group of people interviewed. However, do not feel obligated to answer any question to which you object.

23. Do you have a religious preference?

a. Pretestant _____

b. Catholic _____

c. Jewish _____

d. Other _____

24. How many members of your family are: _____ under 12 years of age; _____ 12 to 18 years: _____ adults?

25. What is the occupation of the head of the household? _____

26. Do you work away from the home? yes _____ no _____

If yes, occupation _____

27. What is the last grade in school completed? _____

Head of household completed _____

28. Which group represents your age?

under 25 _____ 25 - 34 _____ 35 - 44 _____ 45 - 54 _____ 55 or more _____

29. Which group represents your gross household income?

under 5,000 _____

$5,000 to $9,999 _____

$10,000 and over _____

A MANAGERIAL PLANNING MODEL: AN APPLICATION TO THE FARM-CULTURED CATFISH INDUSTRY IN DETERMINING THE CHARACTERISTICS OF PROCESSED FARM-CULTURED CATFISH CONSUMERS IN LITTLE ROCK AND NORTH LITTLE ROCK, ARKANSAS

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An abstract submitted in partial fulfillmentment
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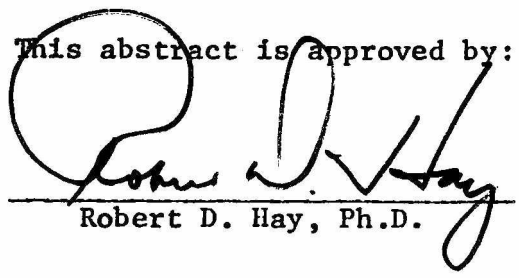

Robert D. Hay, Ph.D.

ABSTRACT

The objectives of the study were: (1) to evaluate the processed farm-cultured catfish business in its embryonic stage during 1968 in terms of a systematic managerial planning model (MPH); (2) to focus on the managerial strategy of market segmentation and determine the relationships between the number of processed farm-cultured catfish sales and selected economic and socio-economic determinants or consumer market behavior.

From the evaluation of the processed farm-cultured catfish business as it existed in 1968, it was suggestive that the planning process was not implemented thoroughly. Several areas exhibited weaknesses or unfavorable influence that were deterrents to the success of processed farm-cultured catfish production. The weak and unfavorable planning areas encompassed management availability and quality and the environmental factors of marketing competition, regional preference, race, age composition of household, occupational groups, formal education of the homemaker, and religious preference or prospective customers.

To accomplish the task of focusing on the managerial strategy of segmenting the processed farm-cultured catfish market, the metropolitan areas of Little Rock and North Little Rock, Arkansas, were selected to provide the sample data. Two experimental techniques were used to measure variations in consumer behavior. They were: a matched-lot experimental design and a personal interview survey. Altogether, 246 purchasers of farm-cultured catfish and 235 non-purchasers were sampled in six Kroger Company super-markets. Nonparametric statistical tests

were employed to measure and analyze differences in consumer actions, opinions, and attitudes toward farm-cultured catfish.

Among the more important suggestive inferences that were drawn from this analysis were:

(a) The substantially higher rate of sales to households in the high income status coincident with product satisfaction within the various income status groups suggested that to increase sales, promotions of processed farm-cultured catfish should be directed at the higher income segment of the market.

(b) The form or forms of processed farm-cultured catfish necessary for maximum market penetration as suggested by sales and preference for and greater satisfaction with were: (1) fresh whole fish (2) fresh steaks.

(c) Variations in sales of and the favorableness toward farm-cultured catfish in the social groupings suggested to the processed farm-cultured catfish industry the market segments with more homogeneous purchasing habits and attitudes thus giving them a means of pinpointing the potential target market for their product.

The selected economic and social determinants of consumer behavior analyzed are not all inclusive since interrelatedness exists among many of the determinants examined; however, implications are that short range planning of the processed catfish business should be directed to increasing consumer demand for their product through marketing programs directed toward one or a combination of favorable economic and social household or family determinants of consumer behavior rather than through product improvement or differentiation.